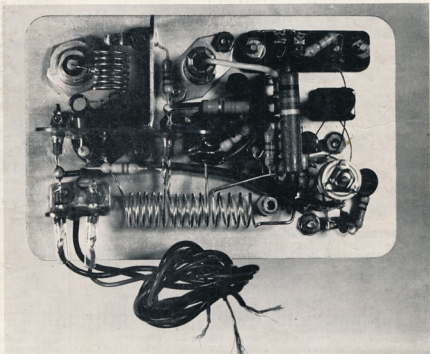


AMATEUR RADIO

NOVEMBER 1962



Vol. 30, No. 11



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OUR COVER

The under-chassis view of the Simplified High-Performance Two-Metre Converter, the technical article of which commences on page 2.

FEDERAL COMMENT

★

YOUTH RADIO CLUBS

In recent years, membership of the Divisions of the Institute has grown at a lower rate than the overall growth of licensees in the Commonwealth. Several Divisions, but notably the New South Wales Division, has always possessed a good number of associate members to swell their total membership. This has not occurred by accident, but by a continuing process of encouraging new blood into W.I.A. affairs.

It has been the policy of the Institute for a number of years to form clubs in appropriate centres—say in Police Boys' Clubs and the Boy Scouts' Organisation—to create interest in Amateur Radio among the youth of the nation. At the Convention in Perth earlier this year, the New South Wales Division put forward detailed plans for the formation of radio clubs in schools, particularly high schools. The plan suggested taking the young enthusiasts through a series of proficiency tests with merit certificates awarded at each stage of their advancement in Amateur Radio.

Federal Council agreed that this plan should be implemented in all Divisions at the earliest possible time, and to this end, the N.S.W. Division has since supplied the full details to each Division for their use. The highest praise must be given to the N.S.W. Division for their great effort which has already been discussed with and accepted by the Education Department in their State. There are already a number of such radio clubs functioning in New South Wales, under the Division's guidance, and even at this early stage in their development, are achieving outstanding results.

The technological advantages of such a nation-wide plan are obvious and should on this account alone receive the fullest co-operation of Government authorities; but perhaps a less obvious advantage is the sociological aspect of the scheme. The promotion of a healthy interest in a worthwhile hobby such as Amateur Radio must eventually have some effect to lower a growing delinquency rate, and in this sense, receive even greater support from everyone interested in the future welfare of our younger generation.

It is therefore with the strongest possible motives that we urge every Division to put this scheme into operation immediately—there are many organisations available apart from high schools who would no doubt welcome such a plan—and promote activity by the formation of special groups if necessary to handle the programme. In the meantime, the Federal Executive is already pursuing this matter and you will hear more of this in the ensuing months. The culmination of a united effort by Divisions will not only be to assist the nation in a technological and sociological way but to indirectly help the W.I.A. in the resulting membership increase.

FEDERAL EXECUTIVE, W.I.A.

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Simplified High-Performance Two-Metre Converter

W. M. RICE,* VK3ABP

THIS converter has been developed in several respects from that described by the VK2 V.h.f. Group some years ago in "Radio, Television and Hobbies" and usually referred to (in VK3 anyway) as the "R. & H. Converter". However, with apologies to its originators, I feel it has been improved a good deal by re-design along the following lines:—

- (1) Smaller chassis ($3\frac{1}{2} \times 5"$ minimum).
- (2) Much simpler shielding layout.
- (3) No "hot" feedthroughs or components above chassis.
- (4) 6ES8 r.f. stage in series cascode (saves h.t. current).
- (5) Oscillator inductively coupled into mixer circuit.

The circuit of the converter is shown in Fig. 1. Apart from the inductive coupling, other points are the use of neutralising on the r.f. stage grounded cathode section (as in the original converter), but being a series cascode circuit the adjustment of neutralisation is rather different.

The inductive feedback type of overtone oscillator is retained, although I have heard of quite a few constructors having trouble here with the original circuit and changing it to the "Robert Dollar" type. Please yourself on this point, but the original circuit has functioned perfectly in at least half a dozen converters with which I am acquainted.

CONSTRUCTIONAL DETAILS

Much of the layout of the converter will be apparent from the under chassis photograph (Fig. 2), while the side view (Fig. 3) shows the top chassis arrangement. An aluminium chassis is satisfactory, as no soldering to it is necessary.

The layout is not very critical apart from r.f. and mixer socket orientation and placement of some of the by-passes. The mixer socket is right in the centre of the chassis, while the r.f. stage is on the longitudinal centre line and about $1\frac{1}{2}"$ centre to centre spacing from the mixer. A shield $1\frac{1}{2}"$ deep (ordinary tin-plate is quite satisfactory) runs across the centre of the r.f. socket and ends at the centre spigot of the mixer socket. It is soldered to the centre spigots of both sockets and suitably notched so that its edge butts against the chassis surface.

Solder lug under the socket mounting nuts (or brackets bent out from the shield edge) provide earthing for the shield at both sides of the r.f. socket and one side of the mixer socket. Slots cut in the shield accommodate pins 4 and 9 of the r.f. socket and pin 4 of the mixer socket, these pin contacts being soldered to the shield.

A feedthrough capacitor close to the outer side of the r.f. socket takes heater voltage through to pin 5 on the r.f. socket, while a $\frac{1}{4}"$ hole in the shield permits L3 (inside a spaghetti sleeve) to pass through from pin 6 to pin 3.

* 54 Maidstone St., Altona, W.18, Victoria.

● Here is a unit to suit the Amateur who needs a converter. The article and photos will assist to make construction simple.

Another shield at right angles to the first helps to enclose the aerial coil L1, and just to the right of the shield junction (in the photograph) are the two feedthroughs (one above the other) which anchor the "earthy" ends of L4 and L5; the L5 feedthrough being nearer the chassis.

Placement of other parts is "according to taste" providing that pin 6 of the oscillator socket is conveniently handy

throughs should not obstruct access with a tuning wand to the end of the interstage coils L4 and L5. Clearance should be allowed around the chassis edges to fit the whole unit into a shallow box— $1\frac{1}{2}"$ is suggested as a suitable depth, as this will then just clear the Philips trimmer, which is the item projecting farthest beneath the chassis.

ALIGNMENT

If the coils are all wound exactly to the specifications of Table 1 the converter should perform reasonably well with only two adjustments. The 3-30 pF. trimmer is set to the third overtone (as evidenced by a drop in h.t. current and a rise in noise output from the i.f.

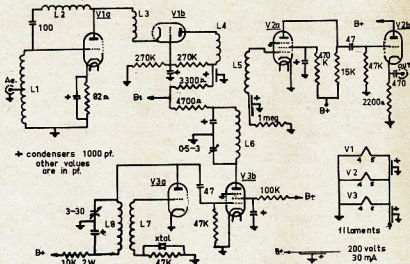


Fig. 1.—Circuit of the Two-Metre Converter.

V1, 6ES8, cascode r.f.; V2, 6BL8, mixer-cathode follower; V3, 6BL8, osc. multiplier.

to the end of the multiplier output coil L6. The 0.5-3 pF. ceramic trimmer must also be close to pin 6.

A six-lug tag strip runs across the chassis between oscillator and mixer sockets, a free lug at the oscillator end providing a tie point for the h.t. end of L6, which should be by-passed back to pin 7 or 8 and thence to earth via a solder lug under the socket mounting nut.

The screen by-pass on V3 goes to a lug under the adjacent mounting nut. All other by-passes connect either to the appropriate socket centre or the tin shields, using the shortest possible leads.

The 3-30 pF. Philips trimmer (oscillator plate circuit) has its spindle soldered to the centre spigot of the oscillator socket (which is of course earthed).

One final point, not too well observed in the unit photographed, is that the bracket carrying the lower input feed-

receiver) and the ceramic trimmer is then peaked for maximum noise output, i.e. maximum oscillator injection at the required frequency.

The recommended i.f. is anywhere from 2 Mc. up to perhaps 20 or so (depending on the receiver used to tune it). The converter illustrated (and several others) uses a 7890 Kc. crystal (a popular disposals frequency) which on the sixth harmonic of its third overtone comes out at a shade over 142 Mc., covering 144 to 148 Mc. to an i.f. of just under 2 to 6 Mc. Alternative crystals for other i.f.s. are listed in Table 2.

More refined alignment checks may be carried out once a 2 metre signal has been located. Use a tuning wand (one end iron slug, other end brass) to establish whether L1, L4 or L5 need a reduction or increase in inductance to peak the signal. L1 will be found very broad, but some experimenting with the aerial tapping point may be worth

while, although only a noise generator will show it usually! L4 and L5 are each fairly sharp and should be staggered slightly to preserve somewhere near constant gain at least from 144 to 145.5 or 146 Mc. L3 is very broad indeed and should need no adjustment.

COIL SPECIFICATIONS

Coil	Function	Details
L1	Aerial	7 turns $\frac{1}{8}$ " diam., $\frac{1}{4}$ " long, 18 s.w.g. tinned. Tap 4 turns from earth end.
L2	Neutralising	12 turns $3/16$ " diam. 26 s.w.g. enamel, close-wound.
L3	Peaking	10 turns $\frac{1}{8}$ " diam., 26 s.w.g. enamel, close-wound.
L4	R.f. plate	6 turns $\frac{1}{8}$ " diam., $\frac{1}{4}$ " long, 18 s.w.g. tinned.
L5	Mixer grid	5 turns $\frac{1}{8}$ " diam., $\frac{1}{4}$ " long, 18 s.w.g. tinned.
L6	Multiplier plate	4 turns $\frac{1}{8}$ " diam., $\frac{1}{4}$ " long, 18 s.w.g. tinned.
L7	Osc. grid	8 turns $5/16$ " diam., 30 s.w.g. enamel, close-wound.
L8	Osc. plate	16 turns, $5/16$ " dia., 30 s.w.g. enamel, close-wound, spaced $1/16$ " from L7 on same former, with plate and grid at opposite ends.

Note: L4, L5 and L6 are mounted end to end on the same axis with about $1/16$ " spacing between adjacent ends.

Table 1.

The neutralising coil L2 will only need adjustment if you are after the best possible noise figure. Some improvement may be possible here by adjustment on a weak 2 metre signal, but a noise generator is really the only satisfactory device to ensure optimum results.

PERFORMANCE

Several of these converters have been built and checked out on good quality test equipment. Without any adjustments at all apart from the oscillator trimmers noise figures as low as 5 db. have been measured. (Noise figure is the ratio of the noise output of the device under test to the noise output of an identical but perfect device at the same temperature).

As far as 2 metre converters are concerned anything under about 8 db. is acceptable, 4 to 5 db. good, 2 db.

CRYSTAL FREQUENCIES FOR VARIOUS INTERMEDIATE FREQUENCIES

I.F. for 144 Mc.	Crystal Frequency	
	Using 3rd Overtone	Using 3rd Overtone
	$\times 6$	$\times 7$
2 Mc.	7889 Kc.	6762 Kc.
3 Mc.	7833 Kc.	6714 Kc.
4 Mc.	7777 Kc.	6666 Kc.
5 Mc.	7722 Kc.	6619 Kc.
6 Mc.	7666 Kc.	6571 Kc.
7 Mc.	7611 Kc.	6524 Kc.
8 Mc.	7555 Kc.	6476 Kc.
10 Mc.	7444 Kc.	6381 Kc.
12 Mc.	7333 Kc.	6286 Kc.
14 Mc.	7222 Kc.	6190 Kc.
16 Mc.	7111 Kc.	6095 Kc.

Table 2.

about the best attainable with present day valve techniques. With a "bit of fiddling" it is possible to obtain a 3 db. noise figure from this converter.

It is possible that when the r.f. stage noise figure has been optimised, the mixer noise may become the limiting factor. This seems to vary quite considerably from one 6BL8 to another, but can in any case be reduced by reducing the screen voltage, i.e. increasing the screen dropping resistor. The original VK2 converter used a 100K resistor here—this is in most cases too low. The 470K shown is a good compromise but may be increased to several megohms providing the attendant loss of gain can be tolerated.

Finally, if you have access to a good signal generator with low leakage and an accurate attenuator, you will probably find that still more external attenuation is needed to reduce the signal to an inaudible level. (A shielded room would also be required.—Ed.) On a good converter, one-tenth of a microvolt modulated 30% should be quite a good signal. One hundredth of a microvolt is detectable on this converter. Who could want better?

COPY DATES

Readers and Correspondents are reminded that with the approaching Xmas holidays, the following dates will apply to the December 1962 and January 1963 editions of "Amateur Radio."

All matter for inclusion, including Hamads, must be received by these dates:

December "A.R." by 8/11/62

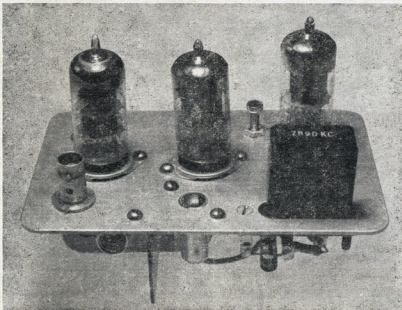
January "A.R." by 1/12/62

Late matters will appear in February "A.R." which will be distributed a little later in that month.

OBITUARY

T. ARTICLE

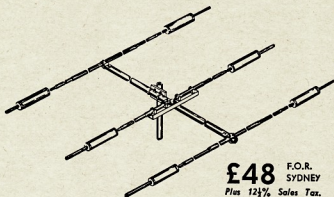
T. Article, a contemporary of Marconi, was well known throughout the Amateur world. His many contributions gave every Amateur that step towards progress. Tech, as he was known, was a prominent contributor to "A.R.," and all readers will join with the Publications Committee in regretting his passing, and hope that all Amateurs will contribute to his last offering.



Top view of the Two-Metre Converter. The under-chassis view is shown on the front cover.

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GEORGE GRAMMER, W1DF

IN Ham circles the words "transistor power supply" are usually taken to mean a modern substitute for the vibrator supply. This one isn't. It's an a.c. line powered supply for transistors.

One of the nice things about transistors is that they take so little power—easily furnished by a few flashlight cells (it says here). There are two fallacies in this pleasant theory: (1) You never have any flashlight cells when you get the urge to try a transistor circuit; or (2) you have some, but they're dead. A few of both experiences prompted the construction of the low-voltage d.c. supply shown in the photographs. Its output voltage is adjustable up to 18 volts, depending on the current demanded of it. The maximum current at 18 volts is about 30 mA., but at some lower voltages the current can be as high as one-half ampere.

THE CIRCUIT

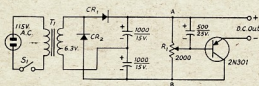
The electronic filter circuit used by Joe Galeskie in his "Imp-TR"† appeared to answer the problem of how to get adequate hum filtering. This circuit also suggested the possibility of getting continuously-adjustable d.c. output voltage, by installing a potentiometer for setting the base bias of the filter transistor.

To save the trouble of rewinding a transformer to give some desired output voltage, a 6.3 volt filament transformer was used, along with a voltage-doubling full-wave rectifier. This on the theory that a nominal 12 volt supply would take care of nearly all requirements, since 12 volts is standard for car electrical systems.

The parts were then haywired together on the bench to see how the circuit would work. It met expectations, so the version shown was built up. The box is 5½" x 2½" x 3". Every-

thing is insulated from it, so either side of the output circuit can be grounded.

The only part of the circuit that required any special attention was the potentiometer, R1. A few measurements showed that the d.c. output voltage stayed more constant with load changes as the total resistance of R1 was made smaller. However, reducing the value of R1 also decreased the effectiveness of the electronic filter, no doubt because of the RC product in the base circuit should have been kept constant. Unfortunately, getting some additional hundreds of microfarads at a 25 volt rating would have run into undesirable bulk. A value of 2,000 ohms for R1 was finally settled upon as a suitable compromise.



RATINGS

The supply wasn't intended to be a replacement for a storage battery, but all of the components used do have rather ample ratings, as compared with what might be taken continuously from flashlight cells. Theoretically, the d.c. output current should be limited to no more than 350 mA., or so, to keep within the ratings of the 1.2 amp. filament transformer. However, the transformer doesn't get particularly hot at this load. The actual limitations on output power are tolerable ripple voltage and transistor heating.

The ripple-voltage limitation applies at the higher d.c. output voltages, as shown by the two upper curves in Fig. 2. A figure of 10 millivolts r.m.s. was chosen as a tolerable ripple, more

Fig. 1.—Circuit of the Low-Voltage Power Supply. Capacitances are in µF., capacitors are electrolytic. Resistance is in ohms.

CR1, CR2—Silicon, 750 mA., 50 volts or more inverse peak (1N358, etc.).
R1—2,000 ohm pot., linear taper.
SI—S.p.s.t. slide switch.
T1—Filament transformer, 6.3 volt, 1.2 amp.

Incidentally, the transistor is not a d.c. regulator per se. The circuit does resemble the series-type regulator, but there is no stable fixed voltage to serve as a reference. Nevertheless, there is a species of d.c. regulation—enough so that the output voltage is held considerably more constant than the d.c. input voltage (between points A and B) with changes in load current. With a fixed setting of R1 in the middle range, the voltage drop is of the order of 20 percent, from zero output current to a load of around 300 mA. At light loads (up to perhaps 50 mA.) such as would be representative of most transistor circuits, the drop is under 5 percent—hardly noticeable. The d.c. could easily be regulated by using a Zener diode as a reference, but at the expense of the voltage-adjustment feature.

or less arbitrarily. It represents just detectable hum in a pair of headphones connected across the supply output terminals (with low ambient noise and a headset having reasonably good low-frequency response). This is probably a rather severe test; we haven't yet heard a trace of hum in actual use of the supply on transistor equipment. The 18-mV. curve can be taken as an "absolute" maximum, because at higher current the hum increases rapidly; the electronic filter begins to lose control above this level.

Transistor heating is the limiting factor at low output voltages. Here the collector-emitter voltage is highest, leading to maximum collector dissipation. The 2N301 is rated for a flange temperature of 80°C. A series of tests

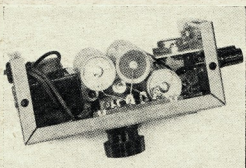
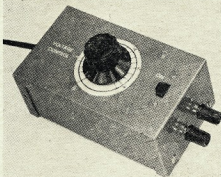
(Continued on Page 8)

* Reprinted from "QST," June 1962.

† Galeskie, "The 'Imp-TR,'" "QST," Dec. 1961.

Left: This compact unit is a battery substitute for use with transistor circuits. Output voltage is adjustable up to slightly more than 18 volts. The calibration scale shown is in terms of no-load voltage.

Right: All circuit wiring is between the points on two strips, one mounted as shown and the other in the corresponding position on the far side of the box. The two diode rectifiers can be seen below the two filter capacitors in the center; these capacitors are the 1,000 µF. electrolytics in the voltage doubler. The filter capacitor for the transistor base is at the right. The transistor is mounted on an aluminum shelf measuring 2½ x 1½ inches, with a half-inch mounting lip bent upwards. Insulating washers are used to bolt the shelf to the side of case, since the collector is not insulated from the shelf. The binding posts are similarly insulated.



CRYSTAL CONTROLLED TRANSMITTER

R. K. GRAHAM,* VK6ZDS

FOR 576 Mc.

It has been observed that literature on equipment for the 576 Mc. band is very limited. To the author's knowledge only two articles have ever appeared in Australian publications^{1,2} and apart from occasional items in the V.h.f. Notes in "A.R.", this appears to be the entire published material.

A publication by Mullard³ has been found to be extremely useful and is worthy of careful study.

The equipment referred to in References 1 and 2 is of the unstabilised variety. It was with equipment of this type that activity here first started. As it was felt that some contribution to the art should be made, the transmitter to be described was designed and built.

CONSTRUCTION

The 5763 osc./tripler, 5763 tripler and the 832A tripler are mounted along the back of an 18" x 12" x 3" aluminium chassis. The plate circuit of the 832A is above chassis level and is co-ax coupled to the 3/20 grid, which is below chassis level.

The two 3/20s are mounted along the front of the chassis, the tripler being mounted vertically and the p.a. horizontally, and both are partially sunk below the chassis and mounting plate respectively.

It is to be noted that the coupling from the plate of the 832A to the 3/20 tripler is critical and all coupling and tuning adjustments show some inter-

lechers are silver plated, inductively tuned and features plate pin connectors which exhibit an extreme degree of flexibility. They are made from the copper strips in a 250v. three-pin socket. The long straight piece is removed and the doubly curved portion is joined to the lecher lines with a suitable strap for added mechanical strength.

It is important that the pin connectors have good heat transfer properties (no brass please), minimise mechanical shock transferred to the tube, and do not introduce serious discontinuities in the lines. Also the residual capacitance across the tube plate pins must be low.

SHIELDING

This is essential for best efficiency. Radiation from the lechers is very high at this frequency. Shielding of the 3/20 plate-p.a. grid resulted in a 10% increase in grid current which was already 1.5 mA., and shielding of the p.a. tank showed a definite increase in antenna feeder current.

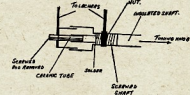


Fig. 3—Modified Philips 3-30 Trimmer. (Internal plates not shown.)

action. The spacing of the 3/20 tripler lechers to the grid coil of the p.a. is critical for optimum performance.

The 3-30 pF. Philips trimmer used on the 3/20 tripler plate and grid circuits has been modified to approximate to a balanced condenser and this also enables a shaft to be fitted for external tuning (see Fig. 3).

An unmodified trimmer, mounted horizontally across the lechers, showed a marked decrease in circuit efficiency.

The grid circuit of the p.a. is made from heavy sheet copper and is series tuned at each grid. The final tank

It was not found possible to dip the final and tuning was indicated by r.f. meters. Without shielding it is virtually impossible to use this method as radiation and body effects makes the readings unreliable.

The shielding makes air cooling essential if the ambient temperature is at all high. If ambient is about 20°C., it is considered that thirty minutes of continuous running without blowing is about maximum, longer than this and

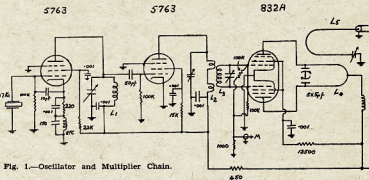


Fig. 1—Oscillator and Multiplier Chain.

TUBES

Final: The QQE03/20 is the logical choice. It is readily available and the price reasonable. Also the plate efficiency is about 40%, drive (and losses) is reasonable, about 5w.; and the output capacitance is relatively low at 1.6 pF. Another tube which appears very good is the 2C39A. Construction wise, it is rather more difficult to use, but a considerably higher input can be run and the cost is slightly less than the 3/20.

P.A. Driver: It is almost essentially necessary that this tube be a tripler stage as there are few tubes which would be effective doublers to this frequency and have a reasonable plate efficiency.

Again the 3/20 was chosen. The tube curves indicated that it would just provide the required drive to the p.a., with an input of about 20w.

The other multipliers are conventional and call for no comment except possibly the 832A. A QQE03/12 was originally tried in this position but only two-thirds of the required drive could be obtained in the grid circuit of the 3/20. The 3/12 was replaced with an 832A and ample drive results.

Thus the line-up became a 5763 osc./tripler, 5763 tripler, 832A tripler co-ax. coupled to QQE03/20 tripler, and an QQE03/20 p.a. The multiplication factor is 81.

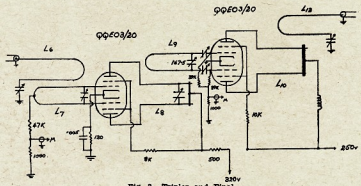


Fig. 2—Tripler and Final.

Filament Chokes are used on the QQE3/20s. All unmarked variables, Philips 3-30 pF.

* 40 Hensman Street, South Perth, W.A.

components start becoming excessively hot. A large heavy chassis helps in dissipating the heat.

GENERAL COMMENTS

A good absorption wave meter is essential. Those used here were first calibrated by Wally VK6ZAA using unbalanced gear and lechers, then when this transmitter was proved to be on frequency, it became the master standard. A process of working backwards, but at u.h.f. especially, finding the band can be a major headache if no calibrated measuring equipment is available.

Another problem is the abundance of high powered harmonics which abound. The 3/20 "tripler" gives out sufficient second harmonic—384 Mc.—to drive the p.a. grid to 0.4 mA. grid current even when the plate of the 3/20 tripler is tuned to 576 Mc. The p.a. final, tuned to 384 Mc., showed a 12% dip in final plate current. Who said that push-pull triplers did not double? In the course of adjustments to the 3/12 mentioned previously, it was accidentally made to double and drove the 3/20 tripler grid to 1.5 mA. grid current.

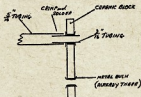


Fig. 4.—Lecher Mounting Details.

All power leads, meter leads and filament leads are run in shielded cable. The push-pull finals are not by-passed. The end support for the lechers is ceramic block. The ones used here are from the 522 receiver tuning condenser. The c. to c. spacing of the bushed holes is the same as the c. to c. spacing of the plate pins of the 3/20s (see Fig. 4).

Frequency stability is a problem with this order of multiplication used here. The initial drift is relatively high and even after a suitable warm-up period the b.f.o. note is poor. If c.w. and narrow band i.f. strips were being used, careful consideration would have to be given to the selection of the oscillator.

POWER SUPPLIES

With an exciter chain of the size and power of the one described, the h.t. current drain is high and due consideration must be given to high current transformers and not to overloaded receiver-type transformers.

Care should be taken that the filament voltage is correct.

Actual running conditions of the original were as follows:—

5763 Osc./Tripler, 5763 Tripler

Plate voltage 295 volts
Screen voltage 240 volts
Total plate & screen current, 40 mA.
Drive to tripler, 1 mA. through 100K.

832A Tripler

Plate voltage 320 volts
Screen voltage 250 volts
Total plate & screen current, 75 mA.
Drive 2.8 mA. through 47K resistor and a 120 ohm cathode resistor.

The exciter power supply drain, 203 mA. with a h.t. voltage of 320 volts.

QQE03/20 Final

Plate voltage 250 volts
Total plate & screen current, 80 mA.
Drive up to 2.2 mA. through effectively 19.5K resistor is available.

All measurements made with an AVO Model 8 Multimeter.

EFFICIENCY

No calibrated power measuring instruments were available for direct measurements. However, by a series of empirical tests, it would appear that the output of the p.a. is of the order suggested by the manufacturers' data, i.e. about 40% (about 8 watts).

COIL DATA

- L1—23 turns of 20 s.w.g. on a 3" former with slug.
- L2—6 turns of 14 s.w.g. 3" diam. (3 turns either side of a 1" space).
- L3—4 turns of 14 s.w.g. 1" diam. (coupled into L2), ends of coil spread to meet the socket pins, condenser mounted across the socket pins.
- L4—Hairpin loop, 5" long of 1/4" copper tube spaced 1" c. to c. Condenser 1 1/2" from plate pins.
- L5—Hairpin loop, 3 1/2" long of 18 s.w.g., 1" c. to c., spaced about 3/4" above L4.
- L6—Hairpin loop, 2 1/2" long of 18 s.w.g., 1" c. to c., spaced 1/4" above L7.
- L7—Hairpin loop, 2 1/2" long, of 1/4" copper tubing, 1" c. to c., ends spread to meet the socket pins, condenser across the pins.
- L8—Lechers. 1 1/2" effective length of 5/16" copper tubing, spaced 9/16" c. to c. Condenser 1/2" from the short (plate clips are an extra 1/2").
- L9—Hairpin loop, 2 1/2" long, 1/4" c. to c., made of copper sheet 1/2" wide and 1/32" thick.
- L10—Lechers. 3" long of 5/16" tubing, 9/16" c. to c. Effective length 1 1/2", plate connectors are power socket connectors, an extra 1/2" (see text). Sliding short of 1/2" wide copper strip and a suitable screw adjustment for tuning.
- L11—Hairpin loop, 1 1/2" long of 12 s.w.g., 3/4" c. to c.

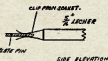


Fig. 5.—P.A. Pin Connector Details.

CONCLUSION

It is appreciated that few Amateurs build gear exactly as described in the literature. Every one introduces some modifications and thus the art progresses (?).

This article is one idea for a 576 Mc. transmitter. No apology is tendered for the use of high powered tubes throughout. If any sort of work is to be done after the transmitter is built, propagation checks, antenna tests, etc., a reliable r.f. source is essential. As the transmitter becomes bigger the reliability of the equipment must increase or one is going to spend all the

experimenting time patching up the transmitter, so build conservatively.

The antenna used here is a 13 element long yagi designed by the author from graphs in the V.h.f. Handbook.

The modulator is a pair of 807s in modified 2JU circuitry.

It is hoped to carry out some experiments with a high powered final. The tubes available here are microtubes, 15E, 2C39A and a coaxial tube R.C.A. 6884. This latter tube will take the maximum Amateur input power and requires little drive.

The author would be grateful for any correspondence on high powered finals for 576 Mc. or on 576 Mc. generally. ●

REFERENCES

1. "Amateur Radio," 1946.
2. "Radio and Hobbies," August 1951.
3. Data and Application Notes for QQE03/20 and QQE06/40. Mullard, May 1958.

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TRANSISTOR POWER SUPPLY

(Continued from Page 5)

showed that, with the type of mounting and enclosure used here, a collector dissipation of 3 watts was just under this temperature rating. It takes a few hours for the transistor temperature to stabilise at this figure, and larger currents than are shown by the curve of Fig. 2 can be taken for short periods if the transistor is allowed to cool off subsequently. Ordinarily, however, the shaded region should be avoided. The transistor limitation could be removed by using a regular heat sink for the 2N301, but this would increase the bulk by a considerable margin.

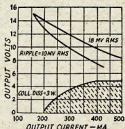


Fig. 2—Rating Chart—permissible output current v. output voltage. Power supply ripple voltage will be less than the values given by the two top curves for all points below the curves. The shaded area should be avoided because in this region the transistor temperature will be over the rating unless an adequate heat sink is provided.

USES

In most transistor circuits the steady current is quite low, and this supply has far more output than is needed. However, the extra capacity is handy. For example, a practical transistor circuit may call for two or more voltages, ordinarily obtained from taps between cells of the battery. With a single voltage source a voltage divider has to be used, and it should have as low resistance as possible. With this supply you can usually afford to put a fairly heavy current through a low-resistance divider, and still have plenty left over for the transistors.

The adjustable output voltage is useful not only for "sneaking up" on normal operating conditions when first trying a new circuit, but also for determining the limits of voltage at which a piece of equipment will operate.

The gadget can even be used for tube circuits—for example, as a d.c. supply for the heaters in the early stages of a high-gain audio amplifier. It will easily handle two 12.6 volt, 150 mA. heaters, or one 6.3 volt 450 mA. heater. It is thus useful for helping to localise hum troubles in testing amplifiers or oscillators.

Finally, unlike flashlight cells, it's always fully charged and ready to go, just as long as there's an a.c. outlet within reach of the plug!



EXPLANATION

The Publications Committee regret to announce that the paper previously used to print "A.R." is no longer available, hence newprint will again be used for future issues.

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- Above or below chassis wiring.
- Capacity: 10 to 250 watts as under:

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UM0	10	20	60 mA.	2 1/4" x 2 3/4" x 4"	—	£5/16/0
UM1	30	60	120 mA.	3 1/4" x 3 1/4" x 3 3/4"	5 8	£7/9/9
UM2	60	120	200 mA.	5 1/4" x 4 1/4" x 5 1/4"	11 8	£10/13/3
UM3	120	240	250 mA.	5 1/4" x 5 1/4" x 5 1/4"	14 8	£12/2/6
UM4	250	500	400 mA.	10 1/4" x 6 1/4" x 8 1/4"	41 0	on application

Connections for Woden UM1, UM2, UM3, UM4 Modulation Transformers

SECONDARY CONNECTIONS AND IMPEDANCES FOR R.F. LOAD																			
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0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
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0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000	4000	5000	1000	1500	2000	3000
0000	1	1-1	1	1000	1500	2000	3000	4000	5000	1000	1500	20							

ROSS HULL MEMORIAL V.H.F. CONTEST, 1962-63

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual contest which is held to perpetuate the memory of the late Ross Hull whose interest in v.h.f. did much to advance the art.

A handsome Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed, framed photograph of the Trophy.

Objects: Amateurs in each VK Call Area will endeavour to contact Amateurs in other Australian Call Areas and Overseas.

Date of Contest: 15th December, 1962, to 13th January, 1963.

Duration: From 0001 hours E.A.S.T. (1401 hours G.M.T.) on 15/12/62 and 14/12/62 respectively, to 2359 hours (1359 G.M.T.) on 13/1/63.

RULES

1. There shall be three main sections to the Contest:

- Transmitting, Open, 50 Mc. and higher.
- Transmitting, Phone, 50 Mc. and higher.
- Receiving, Open, all bands, 50 Mc. and higher.

2. All Australian and Overseas Amateurs may enter for the Contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f. bands may be used, but no cross-band operating is permitted.

4. Amateurs may enter for any one of the transmitting sections. All contacts must be consecutively numbered in the one number sequence to facilitate checking.

5. Only one contact per band per station is allowed each calendar day.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of 5 or 6 figures will be made up of the RS (telemetry) or RST (c.w.) report plus three figures commencing from 001 for the first contact and will increase in value by one for each successive contact. If any contestant reaches 999 he will start again with 001.

9. **Entries** must be set out as shown in the example, using only one side of the paper. Entries must be postmarked not later than one month after the Contest (i.e. not later than 13/2/63) and addressed to the **Federal Contest Committee, W.I.A., Box 638J, G.P.O., Brisbane, Queensland.**

10. **Scoring** for all sections will be based on the attached table. Contestants will have to agree between themselves as to the distance between their stations. Such distances must be shown in their log entry in the column usually used for remarks or bonus points.

11. **Logs:** All logs shall be set out as in the example and in addition will carry a front sheet showing the following information:

Name.....Call Sign.....
Address.....Section.....
.....Claimed Score.....

Declaration: I hereby certify that I have operated in accordance with the Rules and Spirit of the Contest.

Signed.....
Date.....

Note: Entries on the front sheet must be clearly shown in block letters.

12. The right is reserved to disqualify any entrant who, during the Contest, has not observed the regulations or who has consistently departed from the accepted code of operating ethics.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards:** Certificates will be awarded to the winners of each section in each VK and Overseas Call Area. The VK contestant who returns the highest score in the transmitting sections and who is a financial member of the W.I.A. will hold the Trophy until the next Ross Hull Contest is decided, and in addition will receive an appropriately inscribed photograph of the Trophy.

GENERAL

A new method of scoring has been evolved from suggestions made by the majority of VK Divisions. Comments on the operation of this new method will be appreciated by the F.C.C. It is suggested that contestants obtain a large scale map of Australia and of their State and mark on these maps the radial distances from their location in accordance with the scoring table.

RECEIVING SECTION

1. Short Wave Listeners in Australia and Overseas may enter for the Contest, but no transmitting station may enter.

2. Contest times and logging of stations on each band are as for the transmitting sections.

3. To count for points, logs will take the same form as for transmitting sections but will omit the serial number received. Logs must show the call sign of the station heard (not the station worked), the serial number sent by it, and the call sign of the station being worked.

Scoring will be on the same basis as for transmitting stations. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day on each band for scoring purposes, but additional reports will be of value to the F.C.C.

5. **Awards:** Certificates will be awarded to the highest scorer in each VK and Overseas Call Area.

SCORING TABLE

	Distances Between Stations	50 Mc.	144 Mc.	288 Mc.	576 Mc.	Higher
Up to 10 miles		1	1	1	1	5
Over 10 and up to 25 miles		1	1	1	2	10
Over 25 and up to 50 miles		1	1	2	10	30
Over 50 and up to 100 miles		4	2	6	20	60
Over 100 and up to 200 miles		10	4	10	30	80
Over 200 and up to 300 miles		20	10	16	40	
Over 300 and up to 500 miles		10	16	30		
Over 500 and up to 1,000 miles		2	30	40		
Over 1,000 and up to 5,000 miles		10	40			
Greater than 5,000 miles		20	50			

EXAMPLE OF TRANSMITTING LOG

Date/Time	Band	Emission	Call Sign	RST/NR. Sent	RST/NR. Rcvd.	Distance	Points Claim.	Blank

NOTE.—State whether Time is E.A.S.T. or G.M.T.

EXAMPLE OF RECEIVING LOG

Date/Time	Band	Station Heard	RST/NR. Sent	Station Called	Points Claim.	Blank

NOTE.—State whether Time is E.A.S.T. or G.M.T.

INTERNATIONAL AMATEUR RADIO STATION 4U1ITU INAUGURATED*

The radio station of the world's first International Amateur Radio Club (I.A.R.C.) was inaugurated at I.T.U. headquarters at 11.30 a.m. on Sunday, 10th June.

Following the inauguration ceremony, the station began to operate at 12 noon for a continuous 24-hour period. The first call was made by the Secretary-General, Mr. Gerald C. Gross, on c.w. The first contact was made with DL4VK, and contacts with Radio Amateurs throughout the world continued during the day and night—more than 1,300 in all.

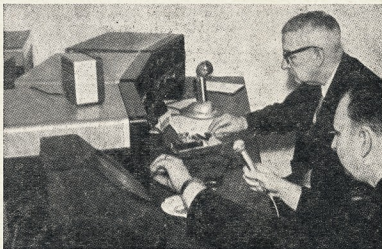
The International Amateur Radio Club, which has also been founded at I.T.U. headquarters, is the first international venture of its kind. Its aims are to further international friendship and understanding through Amateur Radio, to co-operate with all Radio Amateur associations throughout the world, to promote the proper use of the frequency bands allocated to the Radio Amateur Service, and to provide the organisation for managing and operating the new transmitting and receiving station.

The station has been installed on the top floor of the I.T.U.'s new building

and, in agreement with the United Nations and the Swiss P.T.T. Administration, it has been assigned the call sign of 4U1ITU. It is to be operated under the supervision of a committee appointed by the members of the Club, and all Radio Amateurs holding an

Amateur Radio Licence will be welcome to operate on it in accordance with the station rules.

The President of the Club is Mr. John H. Gayer, Vice-Chairman of the I.T.U.'s International Frequency Registration Board (I.F.R.B.).



* Reprinted from "Telecommunication Journal," July, 1962.



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Omnidirectional.
Output: —50 db.
Response: 50-12,000 c.p.s.
Impedance: 50,000 ohm, 250 ohm or 60 ohm.
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Model 603 is a Dynamic Microphone ideal for music, speech and particularly magnetic recording. Can be used on stand or on a small table base.

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S.S.B. POWER MEASUREMENT

I. MACMILLAN,* VK3CS

At the Federal Convention an item was put up by the VK5 Division concerning the Institute approaching the Department regarding the adoption of the British Post Office method of measuring the power of an s.s.b. transmitter.

As there was a considerable difference of opinion among delegates concerning this motion, it was decided that the matter be referred to Divisional technical personnel for reports, before action should be taken.

It is felt that members generally should be aware what the British P.O. method is, and to understand how it works.

The general principle is that the peak output of an s.s.b. transmitter running at the legal limit should be the same as the peak output of an a.m. transmitter running at the legal limit, which seems to be a fair principle.

If an a.m. transmitter is unmodulated (c.w.) and the d.c. input is adjusted to 150 watts, the output voltage, relatively measured on an oscilloscope (envelope pattern) as the height of the pattern on the screen, will have a certain value, which may be represented by, say, one inch of deflection on the screen.

If the transmitter is now 100% modulated, the modulation peaks (as now shown by the envelope pattern on the c.r.o. screen) will reach twice the voltage that the carrier did, so that the total deflection is now two inches.

Now, if the peak voltage is twice the carrier voltage, the peak envelope power (p.e.p.) will be four times the carrier power, because the transmitter is assumed to run into a constant impedance load, and $W = E^2 \div R$.

* W.I.A. Federal Publicity Officer.

From this it can be seen that an a.m. transmitter, 100% modulated, has a p.e.p. of 600 watts if it runs 150 watts unmodulated.

An s.s.b. transmitter can run a "carrier" (single unmodulated frequency) in two ways—either by deliberately injecting carrier from the balanced modulator(s), or by injecting a pure sinusoidal tone into the audio section. In the latter case, because only one sideband is generated, only a single r.f. frequency is generated, and the same effect is produced as when the true carrier is injected, although the r.f. is, of course, the audio frequency displaced from the carrier frequency.

Whatever the method of deriving it, this "carrier" is applied to the p.a. of the s.s.b. transmitter, and having adjusted the d.c. input of the stage to 150 watts, the relative output voltage is measured on the c.r.o., as previously described.

The deflection may be recorded, for example, by means of a grease pencil on the screen, and, by measurement with a rule, further marks are made on the screen corresponding to double the deflection.

If, now, the "carrier" is removed, and speech applied to the transmitter, the peak deflection shall not exceed the second pair of marks, that is, twice the deflection produced by the "carrier". Under this condition the p.e.p. will not exceed 600 watts; the same as a comparable a.m. transmitter. Although this is input power, a class B stage running a high level signal approaches the efficiency of a class C stage, so outputs will be comparable.

Several points are worth making. One is that the frequency distribution of the signal has no effect on the method, because the c.r.o. measures the

sum of all the signal voltage vectors present, it being only possible to have one voltage at a point at any instant and it is, of course, this sum voltage that determines the power.

Most s.s.b. stations already have c.r.o. monitors, and if not, should have, as no other instrument will show whether linearity is being maintained, so that a necessity of having a c.r.o. should be no hardship. In view of the simplicity of a monitor 'scope, and the vast array of suitable components available in disposals, a 'scope might present a lesser outlay than a meter having a specified time constant, as required by another proposed method, and would certainly be a greater asset to the station.

Regulations specifying methods of s.s.b. power measurement are necessary to ensure uniformity of interpretation, but their formulation will have to be approached with some care, to avoid anomalies as a low powered portable station having to be equipped with a c.r.o., which might be a considerable inconvenience; but at the same time giving an operator an unambiguous method of s.s.b. power measurement when his transmitter is capable of the legal limit.

Possibly the answer would be to specify that the c.r.o. method of power measurement need only be applied to transmitters having p.a. valves exceeding a certain rated anode dissipation.

The difficulties can be overcome—the important point is that here is the only unambiguous method of s.s.b. power measurement that has been so far propounded. It is up to the members, through their Divisions to decide whether this is the specifications they want, and then it is up to F.E. to take the matter further.

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Price per MATCHED PAIR
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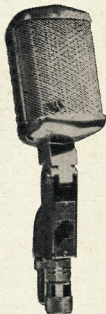
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FK8, YJ1, FW8, VR2 DX-PEDITION 1962

BY BILL HEMPEL, VK3AHO

ON Wednesday, 30th May, 1962, I left from Sydney for New Caledonia, the first leg of a great adventure. Just two hours from Sydney I stepped from the giant DC8 jet into a tropical warmth which was a direct contrast to the winter's morning of Sydney.

I was met at Tontouta Airport by Raoul FK8AU, Felix FK8AC, Daniel FK8AY (Raoul's son), Louis FK8AX, John FK8AE and Archille FK8AS. Landing formalities were quickly taken care of and I was soon on my way by car to Noumea, some 30 miles away.

Although I had a little trouble with my schoolboy French, the understanding of the people soon enabled me to make myself understood.

Next day I collected the KWM2 and accessories, which had been sent air freight to me at Noumea by Cal WAANE. Felix FK8AC did a marvellous job handling all the customs formalities on the equipment.

June 1, I set up the KWM2 in Raoul's shack, which was only five minutes' walk from my hotel. I used my Matchbox and Micromatch to load Raoul's window and vertical. I operated from FK8AU for one week and gave many Amateurs their first two-way s.s.b. QSO with FK8.

On June 7, I packed the equipment and next morning I boarded a DC4 for Vila, in the New Hebrides. Pleasant surprise to find both English and French spoken. I applied for a licence and was given the call YJ1RH. I set up the KWM2 in my hotel bedroom, looking out over the beautiful Port of Vila. Temperature was average, 88°F., a little warmer than New Caledonia.

I put up two windom antennae at right angles to each other, one was 90 feet out over the water. I once again used the Micromatch and Matchbox to load the KWM2 on all bands. Although I made W.A.C. conditions were very poor and only 800 QSOs for the week.

June 15, I returned to New Caledonia and operated again from FK8AU on s.s.b., also operated from the shacks of FK8AC and FK8AX on s.s.b. I also had the opportunity to test the 12v. transistor supply with the KWM2.

June 24, I departed from New Caledonia by DC4 and six hours later we came in over Wallis Island, a volcanic island of 62 square miles, surrounded by a coral reef. As the DC4 touched down on the grass strip, built by the Americans in 1942, I caught a glimpse of the hundreds of native people who had come from all parts of the island to greet the monthly plane. On stepping from the plane all passengers were presented with a beautiful flower lei and I felt I was indeed welcome to this island paradise, so remote from our modern way of living.

I was on my own now, no Amateurs to meet me here. I supervised the unloading of my precious boxes from the aircraft into an old utility, soon I was on my way to Mata Utu over a seven mile road built by the Americans

during World War II. Mata Utu is the administration centre for Wallis, but apart from the Governor's residence, the King's two storey home, and cathedral, Mata Utu is just like any other native village on the island.

The population of Wallis is approximately 6,000 French Polynesian natives who speak a little French and their own language, which is a native dialect. The main foods, which I also ate, are yams, cassava, bananas, arrowroot, paw paw and fish. Education is provided by the missionaries, which is subsidised by the French Government.

July 29, 1961, Wallis and Futuna were granted the status of Independent Overseas Territory of the French Republic.



Archille FK8AS (left) and Raoul FK8AU (right) with the ones that did not get away.

The natives are very expert at weaving and making of tapa. Tapa is a bark cloth, decorated with geometric designs and is widely known for its artistic craftsmanship. Cargo vessels call at Mata Utu about every two months and T.A.I. have a monthly air service. The money used is the Pacific Franc. 100 F. C.F.P. = \$1.00, or 200 F. C.F.P. = £1 Australian.

June 25, I called on the Governor and presented my credentials. He authorised my operation with the call sign FW8BH, the Governor then left me in the care of the Post Master who took good care of me from then on. I set up my shack in a disused toilet at the rear of the Post Office. My antenna was a multiband dipole fed with RG58U. 110 volt power was available for three hours daily.

Toward the end of my stay, I was able to put up another antenna at the engine and battery room, about 200 yards from the Post Office. I used the KWM2 from the battery room with a 12v. transistor supply, although band conditions were poor after 0800 G.M.T. when the 110 volt supply was shut down.

My first QSO from FW8BH was on July 15 with VK5AB who had been waiting seven hours on the 20 metre band for me to show up. From then on the band went wild, the S meter on the KWM2 stayed at 20 over 9 for the whole of the American phone band.

QSOs were slow the first day, but gradually I thinned them down. When I started c.w. operation, the QRM started all over again. I used the external v.f.o. unit in conjunction with the KWM2.

On the evening of 9th July, I was all set to work a lot of VK and ZL friends on 40 and 80 metres. I was using the transistor power supply and at 0900 G.M.T. I was in QSO on 80 metres with Jock ZL2GX. In the middle of a transmission a sharp crack in the receiver, like lightning, followed by a brilliant flash in the northern sky terminated all communications on 80 and 40 for the night. The H bomb had been fired.

I walked to the door. It was now as light as day. I could see natives running to the Chapel and everyone appeared to be very frightened. In the north a white band of light extended over Wallis to the south, terminating in a fiery red glow. After 10 minutes, the red glow extended to the north and the whole sky gradually changed to a pale pink. The bright glow lasted about 10 minutes and it was possible to see as if the sun was shining.

After 20 minutes, I returned to the KWM2. 80 and 40 metres were completely dead. I loaded up on 20 metres and continued working Ws until 1.30 a.m. local time, when the band went dead.

Next morning WVVH were sending a normal 5 on 15 Mc., but conditions were very poor from then till my last day—11th July. Total number of QSOs were 1,800 on s.s.b. and c.w. on 80, 40, 20 and 15 metres.

QSLs for Ws to W4ANE and others to VK3AHO.

July 11 all equipment was packed and addressed back to Cal WAANE.

At 0630 G.M.T., just on dusk, the DC4 rose slowly off the grass strip and I reluctantly said farewell to a tropical paradise where equality, liberty and fraternity really exist.

July 12 I met FK8AU again and went by car with Raoul and his family for five days to a coffee plantation on the north coast of New Caledonia.

July 18, I said farewell to the FK3 boys who had given me such a royal welcome that I have already made a firm resolution that I will return to FK3 and FW8.

I boarded the DC8 jet for Fiji where I stayed with Joe VR2EB in Suva and met VR2DI, VR2BC, VR2BJ, VR2AP, VR2BZ, and at Nadi VR2DS, VR2DQ and VR2EH.

From Nadi Airport I operated the Collins S line with the call sign of VR2DS. Conditions were very unstable.

July 26 once again I packed and boarded the giant Boeing 707 jet on my last leg home. The great adventure was over, with over 3,000 QSOs from four countries.

My thanks to all who assisted and especially to Cal WAANE who sponsored the whole expedition.

* Kyalley, via Tongala, Vic.

SIDE BAND

TRANSMITTER ACCESSORIES

Our man in Gosford, Lindsay Douglas, has been busy in recent months and here, in his own words, is a description of his latest work.

ANTENNA SWITCHING UNIT

Fig. 1a illustrates a simple but very useful gadget in shack of VK2ON. It enables the tx to be switched to any one of four coax antennas or to the dummy load for tuning-up purposes. The switch used is from a BC375 tuning unit. The s.w.r. readings are slightly higher with the switch in position, but the losses involved are only small.

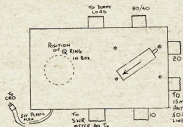


Fig. 1a—Antenna Switching Box.

The all-band ferrite transformer (Fig. 1b) shows no sign of heating although it is placed across the 50 ohm line with about 100 watts of peak power. This transformer is the same as described previously for a TR switch. It allows a two-inch deflection on a five-inch scope to be obtained on 30 and 40 metres. The stray capacities involved (10 pF. c.r.o. plates, 80 pF. plastic flex) resonate with the five-turn coil to give 3.4 inches deflections on 20, 15 and 10 m. VK2AC, Leo McMahon, also swears by this system for c.r.o. take-off and he says that rough tuning with a 200 pF. condenser in parallel or series at the c.r.o. plates allows control of the height of display with a 3 inch scope.

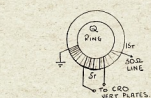


Fig. 1b—All-Band Transformer.

If one uses less than 100 watts the five-turn coil could be increased to 10 turns. I may mention here that a small relay from a Command tx is used to vary the c.r.t. grid-bias on transmit.

On receive the c.r.o. picture is absent but comes up to full brilliance when the relay is actuated by the tx push-to-talk switch or vox.

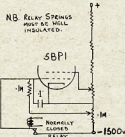


Fig. 2—Brilliance Control.

Phasing, Xtal Filters, Balanced Mod., Linear Amps., Vox

Sub Editor: BUD POUNSETT, VK2AQJ,

6 Alice Street, Queanbeyan, N.S.W.

ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

TANK LOADING CIRCUIT AT VK2ON

This is an adaptation of the circuit in Collin's S.S.B. Handbook. When the 811As are correctly loaded, the ratio of the r.f. at the cathodes to the plate r.f. voltage is also correct. At this loading the meter shows a null (the zero on the 0.5 mA. meter has been advanced one division to make this easier to read). When setting up the circuit adjust loading so that the ratio of grid current to plate current is about 1:5 at full ratings for the 811As. This would be say 50 mA. grid, 250 mA. plate (not cathode) current. The tx is operated into a dummy load of course and the key is pressed for a couple of seconds only.

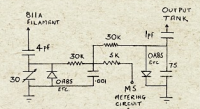


Fig. 3—Tank Loading Circuit.

Now reduce the drive so that the plate current is exactly 100 mA. and adjust C₁ for a null on the meter. (Beware of high voltages, keep one hand behind your back.) Now at any future time the loading can be checked by obtaining a null at 100 mA. plate current. There is some difficulty in obtaining a 1 pF. condenser which can stand 1,000 volts r.f. without melting. Four 4 pF. mica condensers in series would be suitable, or a small section of large size co-ax cable with the inner conductor 1/4 inch in mesh, as it were. However, don't press the key for too long when tuning up. The polarity of the germanium diodes is quite important.

APPLYING A.L.C. TO THE HT32

This is done very effectively by applying rectified bias from the 811A linear stage (or even the 6AH6) to the 6AH6 amplifier. There is quite a deal of amplification between these two stages and a positive bucking voltage of about 45 volts, is very satisfactory. When the system operates the cathode voltage of the 6AH6, as measured through R2 (22K) drops from 1.2 to 0.6v. If there is not sufficient gain, the 9 MC. amplifier bias setting may be altered to increase this by 6 db. (see manual).

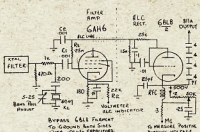


Fig. 4—HT32 A.L.C.

The 6AH6 filter amplifier has four components added, R1 (0.25 m.Ω), R2 (22K), C1 and C2 (0.001 μF. disc ceramic). To save altering commercial equipment, a tiny adaptor was made to fit the 7-pin socket of the 6AH6. The plug was a dished pos-neg. connecting plug from a hybrid car-radio and a miniature 7-pin socket was soldered right on top, pin for pin excepting pin 1. R1 and C1 were cradled in here and some plastic insulation tape used to cover the assembly before plugging in. R2 and C2 were mounted beside the new valve shield. One side of C2 connects to the base of the shield and a tinned wire from this makes contact with the old shields. The items to the right of the dotted line are situated in the

linear amplifier stage. The rectifying diode could be a 6AL5, 6H6 or silicon diode. A germanium diode would not have sufficient back resistance.

RECENT COMMERCIAL EQUIPMENT

The trend in Australia recently has been towards commercial equipment for both the transmission and reception of s.s.b. Many Amateurs who cannot find the time to devote to building their own, find the commercial way the only way to get on the air. There are some "Amateur purists" who may argue that this is getting away from the Amateur Radio spirit, but in most cases, it will be found the people using factory-made gear have come up through the ranks of home builders. Many of us do not see overseas publications, so here is a brief description of a few units on the market in the United States and also available through certain distributors here in Australia.

B. & W. 6190. A very interesting tx is the Barker and Williamson Model 6190. The sixty-one hundred has one very unusual feature for an Amateur tx and that is a crystal controlled frequency synthesizer. This means that a normal continuously variable v.f.o. is not used but instead three controls are used, one to set the hundreds, one for the tens, and one for the units of kilocycles. The units dial is continuously variable. A crystal lattice filter is employed to generate the s.s.b. with a bandwidth of 3 kc. The tx has an output of 100 watts on all bands, 80 to 10 m. into a 30 to 100 ohm line.

Hallcrafters HT32B. The latest from Hallcrafters is the HT32B. This tx also uses the filter method, using a hermatically sealed crystal filter in contrast to the earlier HT37 which was a phasing type. This gives an unwanted sideband suppression of 40 db. or more compared to 40 db. with the HT37. The balanced modulator tube is a 7360 which provides high carrier suppression stability. Again output is of the order of 100 watts on powers 80 to 10 m. with fixed 52 ohm output.

A companion to the HT32B is the HT33B linear amplifier. Similarly styled to the tx, this amplifier runs a kilowatt to a PL172 power pentode, making it a little "overpowered" for use as it stands. An interesting point about this amplifier is the use of a passive grid circuit, having a low impedance. This matches the HT32B output and requires considerable driving power which precludes the use of an attenuator. The output loading is variable and designed to feed a 50 ohm line. The frequency coverage is as for the HT32B.

Swan Transceiver. A new development in transceiver design is provided by the Swan Engineering Co., of Benson, Arizona. While

(Continued on Page 16)

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SIDEBAND

(Continued from Page 14)

the Swan s.s.b. transceiver can be used as a fixed station, it is primarily designed as a mobile equipment, in that it is a single band affair, available in four models covering 30, 40, 20 and 15 metres. The idea being to choose the band that will best suit your needs for mobile operation, and install the appropriate model. 130 watts p.e.p. input to a 6DQ3 tube in the final amplifier puts out a signal that sounds more like a couple of tubes instead of just one. The rx sensitivity is less than 1 microvolt, while both on transmit and receive a nominal 3 kc. bandwidth is achieved with a high frequency crystal lattice filter. Being a transceiver, the transmitted frequency is exactly the same as that received, this means that one can tune into a net of other stations and be automatically zeroed-in without looking at the dial.

Halleraster SX115. Now let us turn to a couple of receivers to round off this day dream (if you are as poor as me) and look into an SX115. This is Halleraster's top Amateur receiver and has everything that a modern day rx should have. It is compact, Amateur-band only plus WWV in nine 500 kc. segments, crystal controlled front-end, a high order of mechanical stability and a frequency variable in five steps from 500 to 5,000 cycles. The sensitivity is less than 1 microvolt on a.m. and less than 1 microvolt on the c.w. In keeping with modern practice, silicon diodes are used in the power supply section. A direct reading linear dial is used with 1 Mc. read in 100 kc. steps.

Drake 2B. The Drake 2B has upheld the high reputation gained by its predecessors, the 1A and 1A. This rx has many features found only in rx's costing about twice the price. The mechanical stability is amazing, heavy bumps not shifting the frequency at all, not that one would subject it to such treatment. It is a (d.) receiver to heavy bumps. The first conversion oscillator is crystal controlled and the variable first i.f. is 3.5 to 4.1 Mc., giving 600 kc. coverage at each of 12 band switch positions. Five Amateur bands are covered and seven other ranges in the 3.5 to 30 Mc. are available using necessary crystals. Selectivity is variable in three steps, 500 cycles, 2.1 kc. and 3.6 kc., and the sensitivity is less than 1/2 microvolt for 10 db. signal to noise ratio. An interesting feature is the use of "pass band" tuning. This enables the operator to tune the 50 kc. third I.F. pass band above or below the fixed h.f.o. frequency. This can assist in eliminating adjacent channel interference.

Some eyebrows may be raised at the lack of mention of the Collins name. This was

intentional because this Company is just now putting on new equipment on the market including some v.h.f. transceivers and when more information is at hand I will bring you the story.

OMISSION

You will remember in last month's notes, that mention was made of crystals being available from Arle Bles for use in low frequency lattice filters. I omitted to include the frequency range of these crystals which was between 380 and 440 kc. Arle was inundated with requests for these sets of crystals and

has now none left. However, a lot of Amateurs were expecting crystals around 435 kc. and were disappointed with what they received. This is entirely my own fault and I must apologise to Arle for any criticism which he has received and to those Amateurs who were upset with the frequencies of their crystals. For those who may not now wish to use these lower frequency crystals, I urge you to return them to Arle or pass them on to another Amateur who can make use of them. These crystals are far too valuable to have left lying on a shelf or in a drawer, not being usefully employed.

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R.S.G.B. 21-28 Mc. Phone Contest

Duration: The contest will start at 0700 G.M.T. on Saturday, December 1, and end at 1900 G.M.T. on Sunday, December 2, 1962.

Eligible Entrants: The contest is open to licensed Amateurs in all parts of the world.

Contacts may be made using any telephony system for which the entrant is licensed, or one contact on each band may be made with a specific station. Duplicate contacts must be logged and clearly marked as duplicates without claim for points.

Contest Exchanges: An exchange of RS reports followed by a three-figure serial number starting with 001 for the first contact, and increasing by one for each successive contact must be made before points can be claimed.

Entries must (a) be clearly typed or written on one side only of foolscap paper; (b) log sheets must be ruled in columns headed (in this order): "Date/Time (G.M.T.)", "Call Sign of Station", "Worked", "My report on his log", "His report on my signals and serial number received", "Band", "Leave Blank", "Bonus Points", "Points Claimed"; (c) be addressed to the Contest Committee, Radio Society of Great Britain, New Ruskin House, Little Russell St., London, W.C.1, England, the name of the contest being clearly shown on the top left hand corner of the envelope which must be postmarked not later than Dec. 17, 1962.

Scoring: Overseas stations may only claim points for contacts with British Isles Stations (G, GB, GC, GD, GI, GM, and GW). Each completed contact with a British Isles station will score five points. In addition, a bonus of 50 points may be claimed for the first contact with each British Isles country-numeral prefix on each band. A further 50 bonus points will be scored for each additional ten stations worked in each of the above categories of band.

WHE

Sub Editor: BILL ROPER, VK3ARZ,
Lot 59, Orchard Street, Mount Waverley, Victoria
ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB EDITOR

NEW SOUTH WALES

50 Mc.: No interstate break-throughs but quite a bit of sideband activity, both single and double, with 22AU, 22XQ, and 22VI active. It will be interesting to see the advantages of s.b. and d.s.b. when the band opens.

144 Mc.: 2WH at Forbes was worked from Sydney for the first time since last new year, on Sunday, 7th Oct. Signals were peaking 5 and 6 both ways over a path of 180 miles. Understand several stations in Bathurst will be also coming on later in the new year and the coming season should prove interesting.

Dave 2AWZ is running a QOQ06/40 mobile, both on 7 Mc. and 2 mx and hopes to clean up at all the Conventions. He is using only one extra battery but has not been seen pushing the car. Roger 2ZRH now has d.s.b. with a 4X150 final going very nicely and has skeds to try and work ZJCG on 2 mx during the summer. Charlie 2NP has had a 522 left on his doorstep. Rumour has it that he intends using it mobile on a long lead.

Not to be outdone by the several stations using sideband, several stations have been heard using multiple carriers quadruple sidebands. They usually only get one station at a time. Only New Camberra station heard in Sydney is Doug 1DG on approx. 144.02 Mc. Equipment details as yet unknown.

The last 7th Oct. meeting on 8th Oct. was particularly interesting as well known sidebander Arie Bles, ex-PA5, gave a lecture on "Filter" type s.b. and the speaker did not well attended so many people missed out.

In response to my previous item asking for intrastate information, the only reply received was or well known s.w.l. Chas. Abernethy who is very active on 6 and 2 mx and heard all ZL districts during the past 2 mx season. I have not heard of him for two months. Phil ZDX will be the new scribe.

Flash: 2ASZ now has found a new 6 mx converter which he is going to mount in a 6 ft. x 3 ft. cabinet. He has four r.f. stages using 50's and it even works—73, ZZLB.

VICTORIA

Eastern Zone—Very little news re v.h.f. bands this month from the Eastern Zone, because of band DX conditions. I only worked one Melbourne once, also local station, was low, and some of the boys either lost or had their aerials damaged.

John V8IG at Ocean Island is building up a 50w. equipment and he hopes to be active during Nov. this year on approx. 52.9 Mc., running a QOQ06/40 around 60-100 watts, with a good site back to Australia, and is also active on 14 Mc. Skeds are being arranged, 73, ZJCG.

QUEENSLAND

Six metres in Brisbane is still relaxing along with not much spectacular activity. George ZGID is back in town after a long stay in the north. The State he has at last decided to transmit from his QTH instead of his car. New stations on 6 mx are Jim 4ZJF, who uses 50w. and a dipole antenna; and Peter 4ZCS, who gets out magnificently using a 6 el. yagi.

Back in Brisbane after a holiday in the southern States is John 4ZAG and Steve 4ZRI. John's return can possibly be attributed to the fact that he didn't cross many VK3 bridges.

Sept.'s hidden tx hunt was organised by Royce 4ZRH and v.h.f. associate Carlo, who was not able to attend because his wife June had just radiated another harmonic. Consequently Carlo and I went, and the show was well attended, seven cars taking part.

V.h.f. Group meeting for Sept. was well attended, but poorly organised. Its one redeeming feature was the showing of a series of slides taken at the Scouts' Easter venture at which v.h.f. types provided communications as a means checking the aerial of various Scout patrols through miscellaneous check points. It is hoped that next year's communications will be as good as the year's.

Visitors to Brisbane is Dave 4ZDG from Ayr, who visited last V.h.f. Group meeting.

Interesting mutterings heard on the air were that the Queenslanders are obtaining small bits of pipe necessary for Amateurs to get going on 2400 Mc. It is hoped that cubical quad enthusiasts building for this band will make some type of antenna.

Have heard over the grapevine that there has not been much activity on 6 mx in Cairns lately but someone still calls CQ forlornly on 51.4 Mc., or thereabouts, so tune higher up the band sometime and you may discover the lost tribe.

WESTERN AUSTRALIA

Sept. Meeting: 38 members and visitors attended. Bert 6ZDF and Lance 6LA were voted into the Group. The major portion of the evening was devoted to an auction of members' gear. Dennis 6AW acted as auctioneer, and all gear sold earned the Group 10 per cent. of the purchase price.

Cocca Is. Beacon: By the time this goes to print the equipment for the beacon will be on its way. The tx and keyer are completed, the converter and power supply are almost ready. Arrangements for the beacon's operation will be greatly received by this Group.

Pathfinder Trial—Several members of the Group assisted the W.A. Car Club by providing radio links between controls and the rally team. Four base stations and 11 mobile units operated to cover the course. The freq. used was 48.88 Mc., which was allocated to the Car Club by DX. P.M.G. for this exercise. Valuable experience was gained by all in operation techniques and mobility in transporting radio equipment and setting up in unusual places. Those who took part were 6PH, 6ZCS, 6ZDM (the organisers); 6ZDK, 6ZCG, 6ZAG, 6DL, 6ZDX, 6ZDV, 63MK, 6ZBK, 6ZCF, 6ZDT, 6LK, 6ZDS, 6ZAY, 6ZBT, and 6ZDN.

60 Mc.: Barry 6ZCF, Hank 6RR and Bert 6ZDF are new stations on this band. Activity is on the increase. Reports of new either built or being built shows promise of maximum activity when the DX season opens.

144 Mc.: More stations are now operating on this band and good contacts have been reported. The by-word now is, "See you on 2."

576 Mc.: Charlie 6LK and Rod 6ZDS have gear operating on this freq. Although two-way contacts have been heard, they mainly operate cross-band.

Bill 6ZDC has taken a position in Kalgoorlie approx. 320 miles east of Perth. He will have both 6 and 2 mx gear running by Xmas and hopes to work east and west from there. The lesser distance from VK5 could prove a winner for Bill. Club by DX. P.M.G. for this exercise.

To All States East of VK5! Our beams are being pointed eastward! We check all signals from that direction. Turn your beams our way. Who knows? You could contact the first VK5 this DX season! 73, 6ZDM.

TASMANIA

The last v.h.f. meeting was well attended and several important topics were discussed, including the 60 Mc. frequency. After much debate, 144.10 Mc. was decided on for a calling frequency and 145.0 Mc. for mobiles. The folly of this decision will be realised as time goes by.

David 7ZA1 and Danny 7ZDM have returned from the north. VK3 chaps, but unexpectedly they did not have much time for DX hunting. They worked most of the Launceston stations and TDK at Pootna, using at one stage a converter. ARV, 6C43 set-up.

144 Mc.: Skeds are being kept between 7ZEE at Oaklands and 7LZ and possibly some others in Launceston. No signals have been heard to date but harmonics are sure to be there. Frequencies used are 7ZEE 144.324 and 7LZ 144.67 Mc., and the northern stations transmit for five minutes at 1830 and listen for 10 minutes. 7ZEE transmit again at 1740 each Saturday night.

News was received rather late to co-operate fully with some VK3 chaps who had a sound of on Mt. Difficult on the week-end of the 8th, but I hope to be able to co-ordinate efforts for the next one. Some four over four contacts were being obtained for the various field day enthusiasts and should help matters in this regard.

60 Mc.: Nothing spectacular has been reported for this band. The amazing amount of r.f. a certain Ned is getting from his QB3/300 tx which is under test. David 7ZAY is experimenting with a Comand converter and is hoping for good stability. 73, 7ZEE/T.

PAPUA

After an absence of signals for three months Sept. brought an opening to JA. On 25th week JA signals were heard on 50 Mc. from 2015 to 2200 hrs. JAIFEN and JARUK being worked by SAU. TE scatter signals on 49.8 Mc. were heard on several days during the month. On 16th very weak audio was heard from Channel 2 tv. during the afternoon and at 1940 a weak carrier was heard on 50 Mc. bearing south. No other openings were observed during the month.

Jim 9AS at Wewak, T.N.G., is now conducting tests on 50.240 Mc. from 1630-1700 and 1900-2000 hrs. daily, running tone, but so far he has not been heard in Moresby. ROK, in Moresby, now has a tx for 144 Mc. and is expected to be heard in the near future.

October has brought the advent of the one-sided picture was received at 9AU's QTH transmission from TNQ7 Townsville was received 59 at 1645 hr. 1st Oct. and on 2nd Oct. that day of writing those words, the test transmission was 59 from 1330 to close-down at 1500 and again from 1600-1700. A tv. rx was hastily borrowed and an excellent quality picture was received. Very little snow and a better picture than your scribe has received on many occasions in Sydney.

How about some 144 Mc. skeds from you northern VK4 chaps on 144? Drop us a line to Box 216, Port Moresby, if you are interested. The antenna on Ch. 2 tv. by the way, is only a 5 el. yagi up about 20 ft. 73, SAU.



Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

ANY TAPES OF V.H.F. SIGNALS?

Editor "A.R.", Dear Sir,

We in VK5 are keen to make a tape recording of notable v.h.f. achievements over the past five or six years (including the last sunspot maxima). This tape would be similar to a recording made by Ed Tilton that has been heard in Australia recently.

Whilst a good deal of very interesting material has been offered by several leading v.h.f. men, it is felt that some of the particular v.h.f.'s may have tapes of interesting v.h.f. signals.

The signals in which we are interested are: 60 Mc. DX including JAW, ZL's, any signals originating overseas, including commercial v.h.f. or tv. signals, also 144 Mc. and long haul signals, Oscar or IL, particularly. Is there any record of the VK3-ZL 2 metre contacts?

In short, if you have, or know of anyone with recordings of any interesting v.h.f. signals, please contact the undersigned.

—Al Rechner, VK5ZCR.



ERRATA

In the article "Matters Mobile," in the August issue, the earth has been omitted on the cathode of the detector diode in Fig. 3.

The author of "A V.h.f. Sideband Rig," which appeared in the October, 1962, issue draws attention to a couple of mistakes in the schematic of the 50 Mc. sideband tx. The 50 Mc. output tank of the second 8AC7 v.f.o. chain should have a 1000 pF. coupling condenser not a 14 pF. as shown. Also the pi coupling capacitor for the 50 Mc. final is 500 pF., not 50 pF. as shown.

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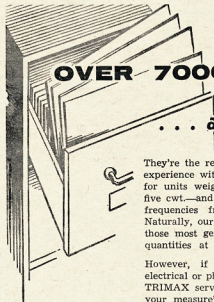
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

80 AND 160 METRES FOR BROADCASTS

VKS Division has requested consideration be given to the use of 80 and 160 metres for Sunday Broadcast, call-backs, and it was decided to hold the matter until a survey of frequencies used by the Divisions can be compiled.

FEDERAL CONTEST CO-ORDINATOR

VK3ABV, Tom Straughair, has been appointed Federal Contest Co-ordinator, an F.E. position designed to maintain closer contact between the F.C.C. and Federal Executive, in the interests of more accurate records, speedier award issues, and smoother organisation, some features of which have been sadly lacking in past years.

CONTEST CERTIFICATES

Lists of members due certificates for various contests over the past two or three years have been prepared, and most certificates will be forwarded shortly.

New certificates for some awards will shortly go to press and after considerable study of a large range of potential designs, the new R.D. certificates are now in the hands of the printer.

MEMBERSHIP CERTIFICATES

A new professional looking certificate design has almost been decided, and new style certificates will be available on top grade paper before long.

80 METRE RELAY OF Z CALLS

The VK3 Midland Zone has requested that permission be sought for the relay of Z call transmissions on 80 metres during Zone hour. F.E. considers that this facility should be available to all Divisions, if at all, and the Department has been written regarding the matter.

FEDERAL CONVENTION ITEM

A VK7 agenda item concerning the use of 10 metres by Z calls, and which was omitted from the W.I.A. is one of the importance of liaison with Government authorities to ensure that Amateur interests are protected. The I.T.U. Conference and the R.F.A.R.C. have proved valuable experience for the W.I.A. in this direction.

SPACE COMMUNICATIONS

A conference on space communications is planned for Geneva in October next year and the I.A.R.U. has reminded member-societies, through the I.U.G.A. of the importance of liaison with Government authorities to ensure that Amateur interests are protected. The I.T.U. Conference and the R.F.A.R.C. have proved valuable experience for the W.I.A. in this direction.

OVERSEAS NEWS ITEMS

Belgium Amateurs are now permitted to use a.s.b.

Some G Amateurs are now permitted to employ narrow band picture transmissions in the bands 80 metres and up.

The Swedish Amateur Society is planning 500 watt beacons on 145 Mc. and 432.5 Mc. between 1960 and 2400 G.M.T. daily.

The W.I.A. has voted in favour of the admission of the Radio Sport Federation of the U.S.S.R. to the I.A.R.U., but has added comment that assistance in call lists and observance of gentlemen's agreement sub-bands.

A list of Amateur Society fees showing El Salvador to be the highest (\$24) and Spain the lowest (\$2c). We seem to be in the middle, listed as \$5. El Salvador, incidentally, has the smallest number of members—25.

FEDERAL QSL BUREAU

Eric Trebilcock, BERS156, the Victorian Division Inward QSL Manager, will be in Western Australia from 7 until Dec. 14 next. During his absence the duties will be performed by his predecessor, Noel Storck, VK3ZQ, until he operates again from his rooms at 478 Victoria Pde., East Melbourne. Alan Reid, VK4AHR, presently in U.S.A., visited Golden, W.V. in September. Alan then pressed on to Seattle, Wash.

The Okinawa Radio Club announces the new Okinawa Award. Qualifications for the award by VK stations consists of confirmed contacts with five KR3 stations. Certified list together with your own card should be sent to Awards Manager, P.O. Box 37, Kadena, Okinawa. There is no charge for the award.

Please note the address change for the following A.R.R.L. QSL Bureau: VE8 QSL Bureau, George T. Kondo, VERX, Dept. of Transport, P.O. Box 65, Fort Smith, N.W.T., Canada.

Membership in the QRP Club (U.S.A.) is growing apace. Upwards of 330 members have been enrolled in approx. 13 months. Membership qualification is the use of 100 watts maximum, or less, at all times. VK members to date are: VK3 24L, 3NC, 455, 70M, 4C and 3RI. Full information may be obtained from any of these stations or from the Secretary WOCS.

—Ray Jones, VK3RJ, Manager.

NEW SOUTH WALES

HUNTER BRANCH

At the Sept. meeting we saw the best roll-up of members, associates and visitors that the Branch has had for some time. This was encouragement to Barry ZAAH and his team of helpers who travelled from Sydney to lecture on the latest developments in V.H.F. Barry claimed he was not a good lecturer, but he certainly performed a wonderful job. As well as a most interesting discourse, samples of each piece of equipment described were passed around. And, as if to demonstrate his faith in the honesty and integrity of the Hunter Branch, the 1000 r.p.m. crystals were left in the gear! Trusting lads from Sydney! Thirty-eight in the audience almost filled the lecture room.

After the technical bit a disposals sale was held with Gordon Z2SG as magsman and with me holding the cash. I really cannot understand the French saying "allowing this. However, after some Arabian type bargaining, most of the goods on hand were sold and those among our ranks who are knee deep in the complimentary term of scavengers finished off the 800s with no caps and the like for some paltry sum. It is reported that the said scavengers returned to their homes and worked far into the night to get their threepence worth. Others of course were already working far into the night preparing gear for the Field Day and working out diets so that it would be possible to consume as much as practicable on the night of the Dinner, while others still were doing all sorts of tasks in preparation for the annual event.

The Dinner, held at the Esplanade Hotel, was a real, a most successful evening. Those to speak were Stuart ZAYF, Pearce ZAPQ and Max ZMP in that order. A very enjoyable night was had by the sixty who attended although Dennis must have enjoyed the most cigars. Some of our more adventurous members adjourned after the Dinner to the Casandra, a British destroyer visiting the port. They were saluted as they went aboard and then rowed off. Such hilarious goings on have not been seen for some time in our fair city.

The weather for the Field Day was perfect. A great number of cars equipped for tx hunt turned up to do battle and fendish were the plans of those hiding the elusive r.f. generators in the foliage. The 1000 r.p.m. boys for some time which finally resolved itself as a superregenerator in a competitor's car. In the 7 meg. hunt a cleverly disguised dummy tx fooled at least one competitor and caused Sherwood to almost fall into the creek. And that included as well the electric shaver

he was using as a microphone. In the scramble, a duel developed between Bill ZXT and Dave ZAWZ. They finished with Dave first and the second was I, it was when we saw Dave's tail lights glow on transmi that it was found he had been using 100w. The first 2 mx fox was the Morris Minor ZFZ found on the foot 2 mx fox and second was ZZCF.

The afternoon 2 mx hunt was the subject of television coverage and a cameraman from NBN was there to film the fun and games. This was won by John Z2AB with Z2DN 2nd. All the cars were parked before the all-seeing eye but despite a good effort on the part of the reporter, very poor coverage was given of the event on the t.v. and even then it was a week after the event despite promises to the contrary. This was hardly the publicity we had expected.

Dave ZAW and Bill ZXT were the only competitors to find the 7 meg. rig and they arrived in that order. Some very first class home-built gear was on display and after considerable thought the committee awarded the prize to Ken ZANU, our Morse merchant from Muswellbrook. The day ended with the free will collection and the committee bidders securing all the bargains. The big sound from ZNX, Tony Z2CT won the lucky number so I am told.

As for general news this month, things are quite poor. Shannon Bill Z2L finished off his latest loco only to have it leave the rails in a sensational manner. Harry Z2FA found that he had so much gear in the shack that he couldn't get on the bench so he sold half of it, the gear, I mean. Lionel ZCS is back on the bench and looking quite fit. Payne has the only blue fluorescence magic eye in the area—caused by doing some strange short circuiting on a 1000 r.p.m. crystal. I almost forgot, at least three of our associates have decided at last to do some work towards their next contest. The names are not at this present, but I am sure Bill—and it just may be me.

The Monday night re-broadcast of 2WT's news is still being conducted by ZAWX and Z2AB, and the 2000 r.p.m. contest is being run to receive call-backs. If you are in the shack around 1900 Mondays, listen for ZAWX on a 2000 r.p.m. contest. The next meeting of the Branch will be held in the usual place, University College, Tighes Hill, at 8 p.m. on Friday, 8th November. Listen to SWI or ZAWX for details of the lecture for the evening. I do not expect there will be any social gathering this month, but check up on the monthly general meeting on this. 73, ZAWX.

SOUTH WESTERN ZONE

The 10th Annual Convention of the South Western Zone of the W.I.A. was held over the holiday week-end, 29th and 30th Sept., at Gundagai. Those present, including the Police were Harold ZAAH, Bill ZAGF (also his XYL and two daughters). It was pleasing to see the W.I.A. name, number and emblem on the Convention Zone as well as the South West.

The Convention opened on Saturday morning at the Gundagai C.W.A. rooms, where registration was held. After lunch, the afternoon of tea provided by the XYLs. During the afternoon, visits were made to the beauty spots of the Gundagai area, including the Convent, Dog-on-the-Tucker Box, where a delicious afternoon tea was provided free by the Chamber of Commerce, for members. The evening activities commenced with the Convent Dinner, which was chaired by Bill ZAHY, sixty-six adults and twelve harmonies attended the dinner. The 1000 r.p.m. contest was run by Cr. Crowe, officially opened the Convention. The toast of the W.I.A. was proposed by Ross ZPN and was acknowledged by Harold ZAAH, who gave an interesting address on activities of the W.I.A.

Sunday morning saw the field events under the 2 mx hunt. The 2 mx hunt was won by associate Doug Manneke, of Wagga, with Bruce Z2GX second. Next was the 2 mx fox hunt, and this was won in record time by Tim Z2MX with Edith Z2IVP second. The all-band scramble was won by Harold ZAAH, with Col ZASF a close second. The most efficient h.f. equipment was the 1000 r.p.m. contest, won by Eddy IVP taking the prize in the v.h.f. section. The ladies' blind-fold tx hunt was won by Joyce, XYL of the 1000 r.p.m. contest was won by Urnate, harmonic of ZACO, and

SILENT KEY

It is with deep regret that we record the passing of:—

VK2LH—T.G. (Doc.) Hewitt.
VK6AP—Alf Pittard.

the boys' by Peter, harmonic of 2AHV. Competitions for the ladies during the day were won by Joyce, XYL of ZACO, and Barbara, XYL of 2DU. The prize for the lady travelling the furthest distance was Jean XYL of ZASF, and the prize for the lucky number was Mrs. Mills, mother of ZZTM.

A barbecue lunch helped to create a picnic atmosphere which was enjoyed by all on the day. The disposals sale in the afternoon was well attended and cars left more heavily laden than when they arrived. A word of thanks is due to the 2ZB Officer, Bill 2AHV, to all who had helped make the Convention such a success, particularly Dave 2DE and Joyce, his XYL.

BLUE MOUNTAINS SECTION

The monthly meeting of Sept. was held at Lawson on the third Friday night, 17 members were disappointed when Les 2ZB was unable to give his lecture due to a business trip. Anyway, Les will be along for the next meeting and it will be transistorised equipment including 2 mx as before. The evening was still as late as usual, somehow there is always plenty to rag chew about. Supper these days must be on the table, it is probably our club is the difference between a profit or loss for Sid's 2AVK business.

The Bush Fire exercise proved very successful. Bill 2HZ and Dick 2RM acted as mobile stations, whilst 2MX, 2AVN, 2ASZ, 2NK and 2ABK as mobile stations. The operation was on 2 mx and the coverage was very good with the mobiles maintaining contact the time. While on mobiles, another civil defence exercise is coming up similar to the previous one at Katoombs, so keep those mobiles going, fellows.

Warick ZZMS is still busy with study and exams, etc., although not on the air I understand he is a good listener. Best of luck Warick and hope to hear you soon. Also

OBITUARY

DR. T. G. HEWITT, VK2LH

"Doc" or Tom Hewitt, as he was known to his many Ham friends over 30 years, was in all respects a thoughtful, kind and gentle man. He was a doctor, word and action, and to know him was to love him. This is Luke—my beloved physician and as such he will be sorely missed throughout the North Coast of N.S.W.

Pre-war he was well known throughout the world with an outstanding signal from his radio beam, being VK2LH and post-war as VK2LH Lismore. Over the past few years his activities were gradually curtailed so to speak, but he was largely as a result of his failing health and the exigencies of his calling.

His interests were many and varied and his versatility was such that apart from his skill as a surgeon and physician, he could weld or "turn" with the best of them. His grasp of the technicalities of automobiles, photography, cabinet making, boat building and radio was truly staggering and he found the time and energy to keep abreast of the latest in medical practice placed him in a sphere apart. The physical and moral courage displayed over the past couple of years whilst in the final stages of his final illness, are well worthy of the approbation of all and he must be remembered by those who were privileged to know him as "that great and good man."

On behalf of his many friends in Ham Radio, it can be said that his wisdom and kindness will be sorely missed and his friendship never replaced.

My key ever be silent in that Grand Lodge Above.

So passes a perfect gentleman, a wonderful friend and a true Ham. May the sympathy for his irreparable loss.

A. W. PITTARD, VK6AP

It is with sincere regret that the VK6 Division records the passing of VK6AP, Alf Pittard. Alf was very active on all bands 30 years ago and this last 10 years or so he was busy much time in the 20 mx band. For a few years of late, Alf did not enjoy the best of health, although he did attend quite a lot of Institute meetings.

VK6 is the poorer for his passing, and sincere sympathy is extended to his wife and family in their bereavement. Vale Alf.

hear that Warick has been giving Jack Watts a hand with his A.O.C.P.

Two new calls will be issued to club members soon, viz Jack Perris and Noel Walker, both are ready to go on the air. As for chaps, it's been a long road but I am sure you will agree it was worth it. I notice Bob 2ASZ, who has a new call, is now on the 40 mx whip, etc.; looks a bit of all right.

Our next Field Day will be held at Lawson Swimming Pool on 28th October and should be equally as successful as previous years; all are most welcome.

My spies tell me that Bob 2ASZ represented the Section at Newcastle over the long weekend, but as yet have not heard any reports. Yours truly and Noel Walker journeyed to VK3 last the same week-end and the only troubles were with equipment. Our club now is having an enjoyable run. We met some of the boys at Gundagai on the way back and by all accounts their Convention was a big success. Frank 2ACQ wants to know where Trevor 2TM has been; where are you, Trev? Haven't heard you yet. Derrick Boyd and Sid 2AVK are hot on the job with the School Radio Clubs in the area, so it shouldn't be long before everything is organised. T2, 2ADA.

BOORAGUI HIGH SCHOOL RADIO CLUB

This possibly may be the last time that notes from this club appear under a separate heading as the youth programme has been decided to be reported from now on by Ken 13LX. This we think is a good thing and can only assist in furthering the motives of the school clubs scheme. Our club now is well established since formation and we now have over 24 regular members. Radio questions are to appear in the School Radio Club column as an alternative to another question and this year, for the first time, we have had our photograph taken as an official school group.

The tx is back on the air and we are following the new "Operator Certificate" scheme, so please give us a call if you hear CQ from Booragui. The members now handle all the internal and external p.d. and school work are responsible entirely for the tape transcription service and general recording. Another of the things we have set up is an electrical apprenticeship among competition from 34 other candidates. Thank you Mr. Editor for tolerance with our notes. T3, 2ATZ.

VICTORIA

About 25 members were present at the Oct. meeting to hear Jim Godding, VK3ZOG, tell of his experiences in the States and have a look at his radio souvenirs. Jim illustrated his talk with a number of slides showing scenes in his itinerary. The most amazing thing about his visit to U.S.A. was the number of VKs he met whilst there. Thanks for an interesting evening Jim.

There was very little general business, and although Ron 3RN tried hard to start a debate, it died prematurely. Still, as he said, he made his point. Just watch him next R.D. Contest.

Amongst the large number of new members this month was one, Rex Moncur, VK3OB. Although Rex had been in the State for some while, Ham Radio has had to take a back seat until studies were over. Come to think of it, Phyl Moncur has not been seen at a meeting for years. What about it Phyl?

When I left the meeting, there was still quite a gathering around Jim's display of equipment. Hope he got it all home safely.

COUNCIL MEETING

October Council meeting had only one absentee, although the members present should by rights have been home and tucked in their cots. One good thing about having invalids in attendance was the fact that only urgent matters were dealt with, thus making an early night of it.

Summarising the evening, Eric Trebilcock is going interested for a 40 mx licence and the QSL Bureau will operate from 478 Victoria Parade from 1st Nov. until 14th Dec. Noel Storch will be in charge. It was suggested that of Moorabbin Club, arrangements will be made for the State Field Day Trophy to be inscribed with the winner's name each year.

The poor condition of the grower and duplicator at 3WI was discussed. After reviewing the cost of repairs Council decided to replace both.

Field Day rules were reviewed. Anomalies in the present rules have been drawn to Council's attention by several people. Council is taking this matter up through the proper channels.

Only four names were submitted for membership this month, the lowest for a long

time. These names will be submitted to next general meeting for approval. The meeting closed at 10.15 p.m.

GENERAL

The most important event for the month was the W.I.C.E.N. Exercise. As is now well known, for the purpose of this Exercise, the Institute set up a communications network to cover the Shell two-day car trial. 3WI operated as station, using 80 mx, 2 mx a.m. and 2 mx f.m. There was also a 6 mx link from 3AL to 3WI, piping in 80 mx signals. This proved most useful as often 80 mx reception was impossible at 3WI. In the early stages, procedure was pretty rough, but after the first of it, but after a couple of hours, things showed a big improvement. Although I do not know exact number, it was estimated that in this exercise, it was only a small percentage of members.

Those who volunteered for W.I.C.E.N. but whose services were not used this time will appreciate that for an exercise of this type only a limited number can be used. Although it is wrong to single out any persons for praise in a job like this, my vote goes to the coffee makers, followed very closely by a vote for the whist.

Whilst those of us who participated feel the results were very good, we know we had many faults, and realise there is room for much improvement. For this reason, we are getting as many participants as possible to an informal meeting to critically review the event so we can do better next time.

By now, zone secretaries should have their new maps showing zone boundaries. It is possible that cases will arise where there is some doubt as to which zone a member belongs in. In this event Council will be the arbitrator. There has been one minor alteration. The border between the North Eastern and Eastern Zones has been shifted to bring Arthur 3AUL into the North Eastern Zone. This was easier than shifting Arthur!

Pray tell me, does the VK3 scribble have a persecution complex? As I thought it would need him—much. His wife won't let him play with the VK4 boys, but I warn him here and now, the VK4 boys are coming for him. As for his warning, well I have friends in high places, too. Not only do I list the editor amongst my personal friends, but I am on the whole committee, plus members of P.E. and the VK3 Council. Before leaving the matter (for this month), had a visit from an old friend, Ron 3RN, who last week-end had brought a recent newspaper cutting about snakes in Adelaide. Bet that bruises 5SPs knees.

Sorry to have to report that Bill 3TX is on the sick list. He has had a heart attack and will be confined to bed for a while. We all wish him a speedy and complete recovery.

W.I.C.E.N. MEETING

An informal meeting of those who participated in the recent exercise has been held.

W.I.A., VICTORIAN DIVISION

STATE CONVENTION

will be held at

BALARAT

during the week-end of

SATURDAY, 3rd NOV., and

SUNDAY, 4th NOV., 1962

Sunday, 4th November, meeting points:—

10.00 a.m.—BTVS Victoria, Walker St.

10.30 a.m.—VK31W's QTH, Walker St.

11.00 a.m.—VK31W's QTH, Walker St.

11.30 a.m.—White Swan Reservoir Reserve.

Proceed out Humphrey St. North, turn left at "White Swan" sign post. Drive to large "W" sign.

signs all the way.

Bring the family and Picnic lunch. Hot water and barbecue facilities available.

20 mx Hunt, 20 mx QRP, 20 mx and s.b. events, Competitions, Novelties, all with good prizes. Don't miss it!

Approximately 30 attended—including Mr. and Mrs. 3KU. Apologies were received from 3ZEO, 3JAN and 3JOM. Unfortunately a couple of operators have not returned their message forms, so exact number of messages handled is not as yet known. Estimates place the total at 1545, of which nearly 800 went through 3WL. Having got the back slapping over, the meeting settled down to the task of strict self criticism. The failure in procedure and equipment was fully discussed. The outcome was that a sub-committee will be formed to analyse the points raised and find ways and means of preventing the same faults happening again.

The whole thing was beautifully summarised by Fred 3YS when he said it was up to us all to drop the bomb and not to be blown and further, whether we like it or not, use the N.A.T.O. phonetic alphabet.

Two facts have come out of the meeting which are of most interest to those who have volunteered for W.I.C.E.N. There is a definite place in the over-all programme for the Amateurs, and they must have equipment capable of operation from batteries or other emergency power supplies. The a.c. mains are not for W.I.C.E.N. operators.

EASTERN ZONE

Jack 3AJK, of Moe, is now very active on 14 Mc. Since being back he has worked over 18 countries. Jack is constructing a 40 ft tower and hopes to clear a QSL card. David 3DY was temporary off the air as he moved QTH in Maffra to 6 Kent Street (on the hill) and has now moved to 10 Kent Street. He is successful in passing Morse, so awaits his new call sign. Ken 3ZKN is also sitting for the next exam. The Zone wishes you a successful start in the elementary exam during the "blow" in the last week of Sept., and has now a 6 element yagi temporary.

3ACZ, 3GAL and 3ZGR are all active overseas tour during the first week in October. No inter-high school hook-up took place from 3AWL during Sept. owing to exams. October hamfest took place locally. Several Zone members participated in the Scout Jamboree, namely 3AHE (Traralgon) and 3ZKN, 3BB, and 3ZDP.

The Zone will hold its second (summer) family field day at Lakes Entrance later in the year. How about more stations joining the zone early Sunday morning hook-ups?

33, 3ZCG.

MIDLAND ZONE
My activities for the most part of Sept. were confined to my travels to VK2, VK4 and BK. The only radio activity were a few DX contacts on 20 m. and a few on 40 m. In the month, there was however plenty of activity within the Zone itself, details of which were supplied to me by Jim 3SV. Zone members participating in Zone activities are 3SV, 3AHA, 3ZK, 3KU, 3ARS, 3ED and 3AQJ/P (congrats to you Ian on having received your call, and welcome to the Ham fraternity). John 3OR called in with information on disposals. 3JOM and 3UI also paid us the courtesy of calling in the hook-ups.

3OR has offered to supply full dope of circuitry of disposals equipment at his disposal, also 3ED can supply 12 circuit photo-stats, thanks fellows. Who else can offer assistance in circuitry information? A card on ART may be obtained from 3ZIK who, by the way, appears to be the only one active on 2 m. Don't forget 3ZS. 3ZS still take place each Thursday at 8 p.m.

Not much heard from Col 3FO, perhaps the junior op has him occupied. 3SV participated in the W.I.C.E.N. exercise and despite the participation operating conditions were ideal, the exercise was a success. Others who participated included 3AHA, 3APJ/3WI, and 3KU. Jack 3AH has been very active in Zone activities; what about a big bite, Jack?

Anyone wanting to do a frequency check within the Zone should contact me as we have a BC frequency checker. If you wish, we do require a 5 padded transport box for same, any others? Until such a box is procured special arrangements will have to be made for transport of this instrument required by members.

Before closing the notes for this month, I would like to extend our sincere sympathy to R. Giddings and T. Briggs on their recent bereavements. 73, 3ND.

NORTH EASTERN ZONE

3AAQ packed his gear and took it away a few weeks ago, preparatory to transferring his site to the Octopus. He is now busy limbering up his wrist in preparation for the slow Morse transmissions he will make later in October. Heard him ordering 2½ dozen eggs

insulators and hundreds of feet of aerial wire the other day. Actually he is going to build himself a triband rig, and is supporting a present ZL Special (modified). This move came about from a joint contact he and 3AGG had with the same U.S. station; Allan was upset at being down on Bruce's quad signal.

3ALP still suffers from inertia, but I understand he is calling a "working bee" shortly. 3ACD believes he may be causing t.v.i. on 80 m. and has repaired his rotor and is now on the air. The earlier reported gear stripping was due to mis-alignment. 3APP getting lots of thrills from 2 m. and his infectious enthusiasm has induced 3AWT and 3ACU to join in the field net at 12.30 p.m. I note 3APP advertised for a vidicon tube in Oct. "A.R." I wonder what plans he has for the future? Melbourne Cup is not the only place wherein dash horses run.

3AUL, 3KU, 3AWT, 3AYD and 3IG took part in the Sept. W.I.C.E.N. exercise. I was with 3AYD on the Saturday evening, and noted the fenshish look in his eye as he pounced on the five interfering stations and requested them to shift their carriers. As message writer with 3AYD, I was really scratching to keep up with the high speed dictation some of the stations gave. However, we were successful.

Jamboree-on-the-Air: In the Shepparton area, eight stations have kindly consented to have Scout guests along for five periods. By breaking up the event into five periods we have been able to take 24 Scout leaders and 100 Scouts visited the seven local Groups and spoke to boys to give ideas on conversation pieces such as hobbies, badges and local news. We also urged them to tune 40 and 80 m. on their home rx's to tune their ears to poor conditions. The move is covered as suggestions by other amateurs. We have now and the boys become tongue-tied when a mike is placed before them.

All being well, 3ASY should be on the air by mid Oct. His biggest trouble has been the fabrication of cases and chassis to suit. What an expensive range available on the commercial market. The green and green and copper hammertone pressure packed paint; it's the berries, though a bit expensive.

Zone hook-ups have not been too well attended lately. I think that most fellows are critical of lack of interest in them. I wonder if the absentees were not so modest about their interest? If so, we should make it more interesting by letting others know what they have been doing. 73, 3ASY.

QUEENSLAND

INTRASTATE CONTEST

The first intrastate contest conducted in VK4 land for ages was held very successfully on the week-end of Sept. 22 and 23. The work put into organising the contest by the Divisional Council was surprisingly received on an estimated 40 to 50 Amateur Stations were on the air in the two periods, six hours on Saturday and six hours on Sunday morning. The CQ Sunshine State Contest was certainly a good follow-up for all the VK4 boys who came on the air during the R.D. contest. Council has planned some Sunday state events, but Council members need your suggestions still on how arrangements can be improved. Write to Council shortly.

GENERAL MEETING

The Sept. general meeting on the 28th of the month was held at the Club on Sunday. At the invitation of Mr. C. A. M. Weller, 4CZ, members gathered at the Tennyson power house to hold both the meeting and to inspect the station, the most modern in VK4. As could be expected, such an attraction drew a good roll-up of 58. The meeting of just 7½ minutes duration covered the Council recommendation for 17 new members: full: VK4s 4NC, 4WB, 4RX, 4LD, 4BL and 4ZQM; associate: H. Kropp, L. Sharpley, B. Taylor, and 4CZ. Council also planned a presentation to R. Caldwell, W. Harley, W. C. Ball, and J. A. Wyatt.D

As the VK4 members have not been keeping up with the news or bothering to read "QTC," Council wanted to find the feeling on the membership of a possible permanent home for VK4W. The Council had a referendum but only a little over 20 per cent. recorded their preference, so another call had to be made. In the end, the view was taken that the time you read this, it's possible a decision could have been made, and if this decision is not your wish, then if you did not cast your preference, you are free to change your mind. When Council calls for opinions in the future, all members should do their best to make a reply.

BARGARA CONVENTION

Oh, didn't Queensland faces blush when they saw a particular advertisement in the last A.R. about the Bargara Convention? Well, the Burnett Branch, in conjunction with the Central Qld. Branch and the Bundaberg Radio Club, would have a convention at Barga Beach, Bundaberg, on the week-end of Oct. 6 and 7. Now PanSy might think we have a lot of rain in VK4 (some parts anyway), but at this time of the year, it's not too far away to lay the dust whereas to make a bog is just not possible. Anyhow, about 20 Amateur managers to dispatch the Wide Area. Reports from first hand reports, they had a good time in fine weather. The Convention was held at the same time as the Bundaberg Sugar Show, which was a big attraction for Amateurs from more distant parts.

One plea to the organisers though. Those reasonable it to be prepared to appreciate advice beforehand as to the approximate times of scrambles so they can make it their business to be around to give competitors the stations they need to bring their totals.

PERSONAL JOTTINGS

The VK4WI station manager, Alf 4OL, has been enjoying a holiday, and has been dashing hither and yon up and down the coast looking for the big fish. His mobile has been working well, thanks to a plastic protection of coil by detergent squeegee. Alf has been talking quite a bit about good strength. Jim 4HZ is another whose mobile has been heard on the coast. He is now in the Wide Area. Away, the new voice at 4WI was Vince 4VJ. It's no wonder he puts out a great signal from his mobile. The signal of a telegraph pole which appears to be about 50 ft. high.

Up Munduberra way, Herb 4KM has spent most of his time watching a hotted up one-eyed monster but when transmission ceased one night, he managed to race across the bonds looking for the American astronaut. Don 4DL is off to the States at the beginning of the month for a trip to ZL land. George 4GG, who visited the country years back, is now waiting the chance for some good long haul. He is now in the Wide Area. George is one of the more regular contacts of Del 4RT during week days. Del, by now, has been a regular contact of the Wide Area. Heads thanks to the efforts of Frank 4FN.

Country members are still trying to play hide and seek with news of what goes on in the Wide Area. The Wide Area reports to be written and posted in for use on 4WI and in "A.R." Bulletins of news should be able to inform members of what is going on in the Wide Area. If your letter of news reaches me next, then that will be the best. I will be able to pass it on to the Council in Brisbane. If your letter of news reaches me next, then that will be the best. I will be able to pass it on to the Council in Brisbane. I might have to consider asking PanSy his methods of gathering the comings and doings of VK4s to give me a guide. 73, Don.

SOUTH COAST

Some months ago, the sub-editor of the "Printer's Devil" managed to insert in these notes a mention of the Wide Area. It was by Bill 4WS, whilst wrestling with the installation of a mobile unit. The responsible person now has a mobile unit, but the Wide Area provisions, as the happening did not materialise until now. However, it is pleasing to report the sky is again blue on the Gold Coast as the Wide Area is again active.

Last month it was reported that an ex-W Amateur had settled on the coast. I had the pleasure of meeting him on the Wide Area. He was a couple of rx's and a few bits and pieces. He may be enough to arouse interest to have him and am sure he will be a good addition to the Wide Area.

These notes are being penned from Woody Point at the start of August. I will be on the way to the Bargara Convention, and just as they are being read, I feel sure I will be reporting a very successful do as the boys have been very active in the Wide Area. I have met an old timer and old clobber, Stan 4ST, and spent a very pleasant hour with him and am sure he will be a good addition to the Wide Area. I was in Melbourne, 73, 4WS.

TOWNSVILLE AND DISTRICT

At the Burdick and District monthly meeting the guest speaker was Dr. Carman, senior lecturer in physics at the New University. He gave a discourse on v.h.f. signals on the coast. He was very interesting and was greatly enjoyed same and believe he has also asked some of the local boys for a look at their equipment. He was very interested in the work and any remarks that may have been noted. And you know, it may be that we always have that opening and no one monitors it enough to evaluate it.

Other news from there reports that Dale ZDG is in the big smoke learning to fix the one-eyed monster in two or three easy lessons. ALE is going to Christmas Island with a VK9 call sign, maybe will get a new one if he breaks through as he has promised the boys a call of convenience is right. I wonder why one of the local boys always does so good in the R.D. Contest until I braked the car suddenly and cast my eyes over the antenna when he has it even overflows into neighbor's yard. I'll defy a bird to get at the garden underneath unless it is the small bat equipped with his sonar beam.

Having missed Bob's (4TK) voice on the air, I find out that he has started a local A.O.C.P. class and has 16 triers, just so that I will have someone to speak to locally under the conditions are so bad. Visitor on the shack was Merv. 4ZMD from out in the far west where all the dust storms originate. Also BU 4SW was in town, only heard him mobile, too busy sight-seeing to call. Wally 4RU and two Z boys—4ZBE and 4ZDM—have forsaken their old jobs and are on the band wagon with regards to tv. and electronics. Good luck to you all in the new venture.

Ere these notes appear, we will be visited by our old friend and Secretary of the Radio Club, Eric 4GE, who has promised to look up all the old gang and see if they can still digge the 807s. What has happened to the old gang? I can't remember the date of the W.I.A. news on a Sunday on 1432. Don't your receivers have a b.f.o. for c.w. to copy signals? I can't remember the date of the news on Sundays just as soon as the news finishes.

The local Club had their yearly Picnic last Sunday and up to the present no news of how it went. Never take on shift work—every day is the same. Claude 4UX blew in yesterday from the night until their vocal apparatus and left Jess at home. How mean can you get? After I had got the eats ready for afternoon tea, 73, 4RW.

forced to the unfortunate conclusion that someone had been blowing down his ear! All in all, a good time was had by all, and the evening closed at the witching hour of 11.15 p.m.

Rupe 7RM, (ex-8RM) was a welcome visitor to the general meeting this month. Everyone who renewed their acquaintance with him commented on how well he is looking, and also how well he is carrying on the battle with Father Time. He looks twenty years younger than he really is; no kidding. Gilbert 5GX was conspicuous by his absence from the meeting, and I believe he has been spending a little time in hospital with some repairs to his foot. Hope all is well now, OM. I missed the twinkle in your eye when usually say "Good evening, Gil," I mean, "Gilbert!"

Leith 5LG thoroughly enjoyed himself at the meeting, especially during the business session. He brought up the matter of giving the Z boys an opportunity of participating a little easier in the R.D. Contest, and was overjoyed when it created quite a lot of discussion. Not that anyone was against this suggestion, but a number of side issues were brought in and Leith had the time of his life muttering into his beard and glaring at anybody who attempted to introduce the topic of c.w. versus phone into the matter.

Funny how one bumps into little interesting sidelights concerning fellow Amateurs in the most unexpected places. My wife was at the dressmaker's the other day, and arising from the fact that I let the cat out of the bag that her sister used to accompany Jim 5JR on the piano. My wife told me of this and immediately I got my nose on the trail and what do you think Jim used to play? The clarinet. What a fox he turned out to be, a Jimmy Dwyer in his midst and hiding his light under the proverbial bushel. Tut-tut, too-oot and a couple of semi-quavers.

Jack 5LR has been home from work for the past eight weeks battling firstly with some bronchial trouble and then down with the "wog". At the time of writing he is still not the best, but is slowly on the improve. Roy 5DA—"Buck to you—paid Jack a visit and appears to be sparkling on all six, or is it eight? Like a lot of us, he has woken up that providing we remember our age, all will be well, even though we do get a reminder now and again.

Last month I referred to the "Like New Mixer Circuit" in the June issue, and it is remarkable how many of the boys at the meeting went out of their way to find me know that they agreed with all I said. Once again may I compliment the "Mag" on the reprint, and may I also ask if they have anything along the lines of an oscillator using a twin triode which could feed into the said mixer. If the Publications Committee desire it, I will forward my request accompanied with the 1000000000 signatures of request!

The position of the official station SWI has altered somewhat these days. I Mc. has been the regular listening band for the season for many, many years, but these days this band is almost out for the season and 3.5 Mc. is giving by far the best results. Which leads me to say that the boys who are handling the various re-broadcasts deserve a pat on the back for the good work they are doing, even if nobody gets round to doing the pat!

Fred SMA recently spent a few days in the Berri Hospital and was so delighted with the treatment he received that he donated his appendix to the said hospital; hope all is well now. Fred is also a suaver at the recent wedding of Hughie's (5BC) daughter Margo to Dale 5VV at Renmark, so much so that someone was prompted to ask if it a Harn Radio gathering. Our congrats to the happy couple, and I feel that I should give my well known

SOUTH AUSTRALIA

The monthly general meeting of the VKS Division for Sept. was held as usual in the clubrooms to a little below average attendance, in fact for the first time of late there was no meeting for anybody. The guests for the night was Mr. G. Taylor (5ZCG), who discussed "Civil Defence," and a number of those who stayed home, the mikes believed that such a subject would have no appeal to them, did not realise just what they would miss. Once again our worthy President, John 5WJ, with his usual touch of Solomon, decided in view of the fact that there would be very little business to transact, to hold the business and the social part of the evening quickly out of the way. However, this time his Solomon act fell down badly because the members felt a bit talkative and bubbled their way through the night until their vocal apparatus gave out, and after George 5RX had distributed the QSL cards, and short "Smoko" was taken, the stage was set for Geoff to take over.

Speaking personally, and I feel also for quite a number of those present, I did not feel that his subject "Civil Defence" would have much appeal for me, and that is where the second Solomon act fell down for the night, because I can say without hesitation that his talk will rank with any previous one for commonsense, interest, and a sensible approach to everything that all of us have woken up to long ago. Apparently Geoff was a wake-up to the fact that a fair number of his audience would be lukewarm on his proposed subject, because he tackled it from a semi-humorous angle to begin with, slowly dropping this approach as he went on, finishing with a smashing climax, leaving no doubt in the minds of his now interested and somewhat shocked listeners that his subject was really important. Most of the talk was illustrated by figures on the blackboard with a couple of maps thrown in for good measure. I again say without hesitation that Geoff is to be congratulated for the splendid job he did, in fact being amply demonstrated by the number of intelligent questions asked at his conclusion. The vote of thanks, moved by John 5KX, was enthusiastically received by the members present and should have been a good indication to Geoff as to how well his lecture had been received.

A good batch of visitors were present, and among those noticed were Rupe 7RM (ex-8RM), Bob 5JZ (ex-5ZCG), who has been a harmonic I would be the first to admit, and there was also a fine strapping example of a VK4 in Doug 8DT, but in view of the fact that he kept looking sideways at me, I am

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marital advice to Dale at this juncture, "DX before Dishes". Get the message? Hughie SBC has been away for a few days holiday, but my sp. can tell me any information as to the destination.

Tom 6TL, the Mario Lanza of the Murray district, once again has been heard giving voice in the local Eisteddfod, as a member of the Adult Education Choir, and the visiting adjudicator saw fit to award him first prize. The fact that he sang at the same time as the said adjudicator had nothing to do with it, that's how he looks when he hits upper C, or is it?

Veiled suggestions have been leaking through to me of a gathering of the clan at Crystal Brook on Saturday, 16th Sept. I think I will be there, and I would certainly like to be. I think would be a certainty to have attended, and I might have a good story to dig up. If it's real, it will certainly pass further down in this column, and if I don't get it from him, I will still pass it on, with a little of my well-known imagination thrown in for good measure. That should do the trick!

The VK3 Divisional general meetings have run a somewhat set course for more years than I care to remember. So many lectures, so many addresses and a couple of times a year a couple of that, and all in all, the programme organisers, or organiser, is to be complimented on his efforts. He has been doing a good job, the members in increasing numbers that at least a couple of meetings a year should be able to just a get-together sort of a night. Perhaps the only thing that has been missing from the meeting over to the audience and let them move around and mix together, have a raggle of it, will certainly pass further down in this column, and if I don't get it from him, I will still pass it on, with a little of my well-known imagination thrown in for good measure. That should do the trick!

Stuart SMS now has his s.b.b. tx working on 80 and 40 mx and certainly has a mighty signal on the few times that I have heard him. He has been driving along at the moment of writing, although he has been seen driving along in his automobile at times. All we need now is a good weather, and a good well. Col 5CJ can still be heard on the hunchtime session on 7 Mc, and occasionally on 80 mx, but usually for the summer openings on the v.h.f.s. What am I saying? Heresy!

Talking of the v.h.f.s., and by rights I should be, being somewhat of a square and a follower of the d.c. bands, I notice that the 2 boys down in the S.E., Gary SZGR, and Dave SZEX, are active these days now that Barry SZDI is active at Penola on 6 and 2 mx. This means that they get a good chance to check their gear on a signal that is not local. The S.E. gang have three starters for the Oct. A.O.C.P. exam, and although it will be finished ere this, the boys are read, we still wish them the best of luck.

With a great deal of chortling and several other good form, the President, my fowls all keel over, read a large QSL card, addressed to me reputedly from the top of VK4, which contained amusing details about my v.h.f. signal. Apparently it was very amusing, judging by the mirth displayed by all, but mentioning a signal that was not mine, or should it be Norfolk Island, knew more about it than he should.

Have not heard or seen Les SAX for some time now, but I would meet his eye I received a letter from a VK3 who is noted for his generosity toward short wave listeners, and I was told that he had sent the printer's ink from his hands and also from that s.b.b. stuff, so that the said VK3 can copy the stuff, and not be in any way in the back-lash.

Dave SDS is in the middle of tower erecting, a 30 ft. edition, and is busy restoring the efforts of the Northern NSW to take him into poleing a 6 mx antenna right on top. Snow 5NW and Bert 5BB are playing around with 2 mx, but I think they are a bit out of the more, if I do I risk being tackled by the v.h.f. scribe. See SGP has been busy paving around the QTH, but my informant tells me that judging by the time it took him, he has been

paving the streets of Nairne as well. I think he only meant the main street.

Luke 5LL, accompanied by the XYL, is off to VLF in the next few days, the middle of November, and plans to spend a couple of weeks in the apple pie. He sure gets around. From the local press, this week he appeared to be favouring a leg. He had a decided limp, and it appears that he stood on a piece of wood which had a nail protruding from it, and he stepped on it.

Dave SDS and Luke 5LL recently decided to pay a visit to Crystal Brook and meet some of the local boys. The party was made up of the boys, and snowballed to such an extent that quite a large party of the boys, both city and country, descended on Bowman Park, and after a very enjoyable and profitable get-together to the mutual satisfaction of all. Among those present were Dave SDS, Luke 5LL, Pete 5FM, John 5ZZ, Laurence ("Pop" to you) 5LD, The Admiral 5ZAH, all from the city; and from the country areas, came Darcy 5BJ from Kadina, Austin 5WO from Laura, Ron 5AP from Port Augusta, Ern 5EN, Brian 5CO, 5EQ and John Zubrinich who is awaiting his call sign, from Port Pirie; Brian 5ZBI from Port Lincoln, and a number of others, but not least, 5ZMK from Malala.

Bert 5BB and Snow 5NW, two of the local boys who did this arrangement, were armed, hot water, etc. to do nothing of arranging a miniature sports meeting and providing the prizes. Len ex-SVM, who is a printer up in the city, arrived at this time, and was the size of a newspaper, thus making it easy for everybody to know everybody else. "Eunie" (Eunie 5LE, Pete) 5FM, John 5ZZ, Laurence ("Pop" to you) 5LD, The Admiral 5ZAH, all from the city; and from the country areas, came Darcy 5BJ from Kadina, Austin 5WO from Laura, Ron 5AP from Port Augusta, Ern 5EN, Brian 5CO, 5EQ and John Zubrinich who is awaiting his call sign, from Port Pirie; Brian 5ZBI from Port Lincoln, and a number of others, but not least, 5ZMK from Malala.

I cannot help but wonder just how such a good time can be organised by a few keen followers of Amateur Radio and yet for months and months the VK3 Division has been kicking around the idea of organising a picnic along the same lines. There must be an answer to this one, but what is it?

Incidentally, my spy told me that "Zuyder Zee" is still in the city, and is presenting a Picnic, but did not tell me just who that was. At great expense, and at the cost of a couple of hundred dollars, he has managed to bring about a picnic along the same lines. There must be an answer to this one, but what is it?

Carl 5SS is off for the long week-end (don't ask me what for with his birds, or I might tell you) to Cowell, and will be portable using Luke's Type 3, Mark II. Wouldn't surprise me if "skipper's" voice was heard at times!

I usually wait for the "Mag" to reach me, check up on the insults, and then use this last paragraph as a means of retaliation. However, I am over my limit of words and with one insult from VK3, two from VK4, a dubious compliment from VK6, and a couple of hints from other quarters to answer, space has caught up with me. I can save them up! 73, de SPS, Pansy to you.

ELIZABETH AMATEUR RADIO CLUB

At the mid Sept. meeting SPE gave a lecture on map reading. Clive spoke of the importance of this subject, and the importance of taking, and explained the finer points. This was followed by practical exercises. It was surprising to find that many of the members were made by so many intelligent people in so short a time!

And at the Oct. meeting a lecture at the Oct. meeting on transistor application in a piece of commercially made gear. He has been almost totally engaged on working on this equipment for some time, and has been very successful. As to the members' doing: 5DY is building a new receiver, and 5DZ is building a new receiver. Cyril has been working a lot of DX on 29 using a ground plane antenna. SPE is in the throes of house shuffling. 5DT is now erecting a pair of 30 ft. masts. 5ST says he is "clowning around" on 6 mx. He finds 1.8 Mc. very lonely. 5QL is still getting his gear together. 5DI should be on by Xmas - that's old 3BL.

5ZMB and 5ZMK were listening carefully for Mt. Gungahlin "location" in the Grampians, but no results are known. 5ZJH has just completed construction of a six el. beam for six, and hopes to have it 40 ft. up in the next few days. 5ZJH is now using zero bias 6DQs. 5WV gives slow Morse practice to various lads on 6 mx almost every night. 5ZOE and 5ZJH are working on the arrival of a baby daughter. 5FY is undergoing a drastic re-building programme. 5AX mostly mobile. 5NO/5GR on the air again QRP from Gawler. 73, SNO

WESTERN AUSTRALIA

Well, don't say I didn't tell you! The Water Carnival was held at Moora on Oct. 10, and a great time was had by all who attended. Yes! All three of them. Lane 6LR, complete with 122 set floating around the lake; Ray 6WU, with a 122 set floating around the lake; and a 6CL, with his 150w. home station with alternator attached. Also attached was a 40 mx dipole which served all bands. This didn't stop them working Moara, Phillipian 6JX and Nth. Rhodesia, not to mention numerous VKs; all on this 21 Mc. with locals on 40 mx. The water carnival was a very successful event being conducted on 2 and 6 mx. Oh I forgot to mention, there were about 200 couples with their kids, and that's about all interested in the Water Carnival events being held on Lake Dalroor at Moora, so we don't count them.

Reminiscences of Katanning's early days as a couple of months ago brought nostalgic memories to Alec 6AS, who was in the area in those days. Alec was one of those who drifted away from the place when the big blaze started in '38, so he didn't get his ticket until later. Incidentally, Alec has a pretty fair list on the brass, and there's a possibility we may hear him on the air some day. However, Alec also suggests that Katanning would be a good place to hold a local convention. Now, there's an idea!

Which reminds me, too, all mod. cons. at the Katanning shacks, central heating and so on, and at least one of the "X" group are on the air. The "X" group are the "X" group. "Disease" is getting into some of the local types and Robbie 6XR is pawing over his old junk with view to finding it for new s.b. parts. You see, even Robbie can't afford the exorbitant price they quote you; in fact if you did, you might just as well give it away.

There are other sorts of wogs too, and so-called "X" group, but I won't go into a serious attack of golf-on-the-green. This lasted the full term, but he is recovering now and should be back in the city to push the TX switch and give with the r.f.

Getting the r.f. into the ether is always a problem of course, particularly when you are attempting to get a signal out of the ether. I mean, after all, when your car reaches the stage of needing polishing! Well, it's just gotta go! That's all! The removal of the car is a problem, and it is a problem, and easy, for it requires not only positive thinking, but positive action as well. Eh! Who's all this? This is our man and the best of luck to you, Herb.

Tripping about in the car leads me to Clarrie 6XG, who has been "living it up" with frequent trips to Perth, and a number of one-legged bandits in the city should be branded 6XG and start paying a dividend to the new owner, instead of the City Council. This could well be true, for what with supporting parking meters during the day and partaking of rich and exotic Chinese foods followed by the theatre (that's what you and I call theatre) at night, Clarrie will need to strike oil to keep it up. To 73, in all the country. I wish Clarrie, that should pay the bill.

Whilst on this high falutin' level, our esteemed President, Ron 6KW, who departed on a luxury cruise to Japan, and all that jazz, has been back successfully. He was on operations around VK9 and passed onward to JA land. Judging by the Tokyo Tower pleases, he was on the radio, and he was just about able to see Carnarvon from the top. Trust both you and XYL are enjoying the trip Ron.

At the Wai 6AG has decided that he has done enough in one section anyway. As from next March, Wal has decided that someone else should do the job of President. Of course, this isn't the only job that Wal does, so he won't be entirely without a job. Incidentally, it is gratifying to know that when this man goes away, you know through the general meeting, a number of others were received. Keep it up, chaps, this shows a healthy interest in the VK3 Division and the Institute as a whole is doing for us all.

Have you ever been beat a thing can't be done, and then gone ahead and done it? Gives you a good idea of what a good idea it is. I call ego boosting. This happened on the v.h.f. side recently when the V.h.f. Group were responsible for providing radio coverage for the "X" group. You know, a "X" group in a survey, and it won't work. "We've made a survey, and it won't work." Says the steak and kidney man. Much jubilation among the mobbers and fixed stations alike. Troubles! Well, it was a very successful day. Congratulations all round. As a matter of

fact, special congratulations came from the P.M.G. Depart's Radio Branch, complimenting everybody on the high standard of operating and the organisation in general.

After having successfully confused everybody about the date for the 40 mc scramble, when three dates had been quoted in the Bulletin, it was decided to postpone it for one week. Conditions were patchy and conditions for the contest were not as bright as they should have been. Winners to be announced at the Xmas "do".

Something seems to have happened to my spy organisation during this month. I think it's something to do with the fact that I forgot to ask them for a report until it was too late. I shall have to be careful of my network will be blown spy hill 73, 61S.

TASMANIA

Alan TMY has taken a considerable part of his property at Cremorne and, at least temporarily, is a man of leisure. You certainly deserve a rest after working so hard for such long hours, Alan. We hope to hear you more often on the bands now, too. Pat GJV spent a holiday recently in Melbourne, and returned with an AR7 TX and a lot of other equipment he saw but did not buy, for lack of money, so he says. Jack 7JZ is again heard on the bands, particularly 80 mc. Apparently he has been out of the grip of grip over Jack, as it has over several other southern members, with the result that excellent rounders are to be found on 80 mc almost every night.

The club room fund-raising committee added £11/8 to the fund as a result of the function held on 29th Sept. This result was most surprising in view of the rather disappointing number attending the function. However, it is true to say that those who did attend thoroughly enjoyed themselves.

John 7JF is in the course of building up a 150w. rig, and I understand that Den 7DK is rather envious of John's results, and that Den fears that John will reach the D.X.C.C. first.

The Jamboree-on-the-Air was held on 20th and 21st October. Eighteen VK7 stations at least took part. I urge you to forward a copy of your Jamboree log to the Secretary of the "Boy Scouts" Association in Hobart so that a full record of participation can be gained. The boys taking part at your station will also receive a participation certificate and QSL cards will be sent to stations worked by your station.

At the October Divisional meeting, we were very acceptably addressed by Mr. John Greenhill, of the Physics Department of the University on telemetry from balloons. Great interest was shown in the transmitting gear exhibited, and many were the envious eyes turned on the mass of transistors to be found therein. The excellence of the address could be gauged by the attention paid by all present to the lecturer.

Michael 7ZAV has recently gained his private pilot's licence flying with the aero club from Cambridge airport. I wonder if he can not expect some airborn v.h.f. activity? Den 7DK is gradually evolving a mobile tx of considerable merit, and his success in designing and building a centre loaded whip has been amply demonstrated by his working 2AWZ, also mobile, near Newcastle.

Remember the tx hunt on 11th Nov. Be in it and have fun at it, making the function all the more worthwhile for the others taking part. Charlie 7KS is in the process of building a frequency rig with a 2200 in the final. Terry 7CT has been playing around with improving the percentage of modulation in his mobile rig and results have been encouraging.

The v.h.f. boys have decided upon a standard calling frequency of 144.1 Mc. and crystals for this frequency are being obtained in bulk to cut down the price for same individually.

It is hoped to hold a Ham Fest on the week-end of Saturday, 24th Nov., in the neighbourhood of Campbelltown. This site has been chosen as a compromise, to suit participants from all three zones, so we hope that you will attend, together with your XYL and family and make this venture an outstanding success. Details will be fully set out in the Divisional Bulletin, 73, 72Z.

NORTHERN ZONE

For the first time, in several years a Zone meeting was held at a place other than a member's home and our Sept. meeting, in our new meeting rooms, proved beyond all doubt that the frequency of attendance will take place through this change.

As yet no chairs have been provided and members arrived carrying seats of all shapes, sizes and styles. One member was indeed perched on the window sill and another had to sit on the floor. Evidently one of our officers expected an over flow and left a chair outside the front door. A later check established the fact that it was an unnecessary precaution. There wasn't an overflow—in fact there wasn't even a chair.

After the business of the evening was concluded 7DK gave an interesting lecture on "Remote Control".

The Jamboree-on-the-Air was also discussed and it is hoped that a station will have been established at a camp site.

A monster Field Day is also being considered and this will be a huge success, however more about this later.

It is understood that four associates will be taking the A.O.C.P. examination in January and all four are on 144 Mc. increased activity should be evident in the Zone before the next 144 Mc. DX season closes.

The November meeting will be held in the new meeting room, 73 George St., Launceston, on Friday, 9th November. So keep this night free, 73, 71Z.

NORTH WESTERN ZONE

The meeting on Tuesday night was not well attended. Ulverstone not being represented at all. It was suggested that the meetings could possibly be held in private homes, both to stimulate interest in Ham doings and to reduce expenditure, as our funds are low.

Some concern has been felt at the way in which the North Western Zone and the Northern Zone, seems to have been ignored by the Southern Zone. North and North-Western operators experience great difficulty in contacting the South, even during the round-up after the broadcast (when we can hear it). We hear them but cannot contact them! More co-operation in general is needed, the proposed Field Day at Campbelltown may be a step in the right direction.

I hope Dennis 7DR has his house upright again and Max 7DMX has narrowed his beam width. Steam your rig up Bob, because I'm looking for you on 144 Mc, 73, 72BH.

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SELL: Heathkit SB10 Sideband Adaptor, new, in sealed carton, £75. Also Heathkit Balun Coil Set, £7/10. R. J. Baty, VK2ANB, 41 Lawson Pde, St. Ives, N.S.W. (Phone JJ 3707).

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SELL: Panadaptor, Modulator, A.S.T. Sig. Tracer, Multimeter, Power Trans., Chokes, Alum. Tubing, C.R.O. Type MD/32, 522, a lot of good gear and parts. 97 Birkett St., Bedford, W.A.

SELL: Transmitter AT13B ex R.A.A.F. perfect condition, complete, and operating c.w. input 1 kw. to four 813s, xtal or v.f.o., 2.5 to 20 Mc., 240v. a.c., hand-book, 18 tubes, 6 meters, bargain, £25, ex 10 Kulgoa Road, Bellevue Hill, N.S.W. Dr. Alec Dan, FM 1055.

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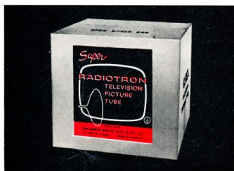
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For additional information concerning these and other Super Radiotron types consult the new picture tube interchangeability wall chart, publication No. TV-3. This AWW chart contains characteristics and replacements for 57 tube types common to the Australian market.

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